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Ы. В.

C. Gurnee Fellows, M. D., President of the American Homœopathic Ophthalmological, Otological and Laryngological Society. 1902.

TRANSACTIONS

OF THE

American Homœopathic Ophthalmological, Otological and Laryngological Society.

FIFTEENTH ANNUAL MEETING.

CLEVELAND, OHIO.

JUNE, 1902.

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PROCEEDINGS

—OF THE—

FIFTEENTH ANNUAL MEETING

—OF THE—

American Homœopathic Ophthalmological, Otological and Laryngological Society.

Held at Cleveland, Ohio,

June 16, 17 and 18, 1902.

FIRST DAY—MORNING SESSION.

THE society met in the Colonial Hotel, and the first session, with 42 members and 67 visitors present, was called to order by the president, Dr. C. Gurnee Fellows, at 9:30 A. M. The other officers present were Vice-President Dr. George B. Rice, Second Vice-President Dr. Charles L. Rumsey, and the treasurer, Dr. George W. McDowell. In the absence of the secretary, Dr. Herbert D. Schenck, Dr. J. Ivimey Dowling acted as secretary pro tem.

The president in opening the meeting addressed the society as follows:

The fifteenth annual meeting of American Homœopathic Ophthalmological, Otological and Laryngological Society is now declared open. There are a number of things that may cause us more or less trouble, and bother us some, due to the unfortunate illness of our secretary, Dr. H. D. Schenck, but by the exercise of a little patience and forbearance on the part of the members we undoubtedly will succeed in surmounting them.

It has been the rule at former meetings to use the program, carefully worked out and prepared by the secretary, as the order of business;

that is, the program has been arranged so as to be both a program and the order of business of the meeting. As the reports of committees and the general business of the society have this year been all put off until after the banquet to night, it may be necessary in some instances to establish a new order of business. It would be, for instance, impossible for the Committee on the President's Address to make any report until after the address has been delivered.

I suggest that we follow the program as far as possible, and read without question, first, the papers of which both the authors and discussors are present; second, the papers of which either the author or the discussor is present; that is, one is absent and the other present, and, third, take up those papers of which both the authors and discussors are absent. These last may be read by title or read in full, just as the members may decide. I will appoint Drs. F. D. W. Bates and David W. Wells as Committee on Attendance, and before actually beginning the scientific work of the program will give this opportunity for comments and suggestions from the members.

E. J. Bissell, M. D.: I should like to know if this is the time for the appointment of committees?

President: No, sir; all that is arranged on the program to take place to night.

G. A. Suffa, M. D.: To whom do we report about the banquet?

President: The banquet will take place at 8:15 P. M. The only thing to be added to the replies returned on the postal cards sent out is that if there should be any present who have not replied on the postals, and yet intend to attend, we should like to have their names, so that the hotel people will know how many to prepare for. So please hand in your names to the secretary at or before 1 P. M. If there is nothing more demanding immediate attention we will have the first paper, which is "The Treatment of Immature Cataract," by Elmer J. Bissell, M. D., Rochester, N. Y.

After the reading and discussion of Dr. Bissell's paper the president said:

I omitted to state that, in the absence of our secretary, I took the liberty of asking Dr. J. I. Dowling to act as secretary pro tem.

I will appoint Drs. Thos. M. Stewart and Wm. A. Phillips as Committee on Press.

We will now hear a few words from Dr. James C. Wood, the president of the American Institute.

Dr. Wood: I shall have so much to say during the rest of the week

that I hesitate to take more than a minute or two of your time. If each of your papers and discussions prove to be as interesting as the one just read and discussed you will get through your long program about next Saturday night. I simply want to give you, each and all, a hearty welcome to the city of Cleveland. We can give you any kind of weather you want, and ordered the rain of last night in order that you may have the finest kind of weather the rest of the week.

I feel particularly well disposed toward this society on account of the excellent work you are doing along the line of accurate and scientific drug-proving. We have tried to arrange a pleasant week for you, and if you do not see what you want ask for it and we will try to accommodate you. If any of the members desire to play golf, I shall be glad to arrange the matter so that you can. At the club of which I am a member I can obtain the privilege of the grounds for you. We are going to have a royally good time, and I sincerely hope that you will heartily enjoy the week.

The regular order of the program was then followed, the papers of those present being read and discussed, and the papers of absentees were read by title. The meeting adjourned at 1 P. M.

FIRST DAY—AFTERNOON SESSION.

First Vice-President Dr. George B. Rice called the society to order at 2:30 P. M. The regular order of business was followed and the meeting adjourned at 6:30 to meet again at the banquet to be held that evening. During this session there were present 46 members and 55 visitors.

FIRST DAY—EVENING SESSION.

The banquet was called to order by the president, Dr. C. Gurnee Fellows, at 8:30 P. M. Sixty-two plates were served, this including the members and their guests.

After the serving of the banquet the president delivered his address, which was listened to with rapt attention on the part of members and friends present.

The secretary pro tem. was then called upon to report, and in the absence of the secretary he made a verbal report, which was approved.

Dr. A. B. Norton then expressed the deep regret of the society because of the enforced absence of the secretary, Dr. Herbert D. Schenck, who was detained at home with an attack of typhoid fever.

Dr. Norton then moved that the secretary pro tem. be empowered to send a telegram to Dr. Schenck expressing the sorrow of the society because of his illness and necessary absence, and our earnest wishes for his prompt recovery. This motion was approved by the society, and the secretary pro tem., acting according to the wishes of the society, sent a telegram to Dr. Schenck.

TREASURER'S REPORT.

The treasurer then submitted the following report:

AMERICAN HOMŒOPATHIC, OPHTHALMOLOGICAL, OTOLOGICAL AND LARYNGOLOGICAL SOCIETY, IN ACCOUNT WITH

DR. GEORGE W. MCDOWELL, *Treasurer.*

Balance,		$103.05	1901. Dec. 23. Express on Transactions,	$4.84
Dues collected,		305.00	1902. Jan. 10. Stationery,	$5.75
			" 10. Exchange,	.10
			" 13. Postage,	5.00
			Mch. 3. Printing (G. A. Pules),	2 00
			May 21. Typewriting (Miss C.),	2.52
			" 26. Printing (H. C. Frances),	2.25
			June 6. Printing Transactions,	167.80
			" 11. Express on Transactions,	23.86
			" 11. Typewriting (Miss C.),	.80
			" 14. Postage,	1.32
			" 14. Exchange,	.50
				$216.74
			Balance,	191.31
		$408.05		$408.05

June 14, 1902.

The president then appointed the following committees:

President's Address—Drs. James A. Campbell, J. N. Anderson, D. A. MacLachlan.

Auditing Committee—Drs. E. L. Mann, George A. Shepard, Thomas M. Stewart.

Transportation—Dr. John B. Garrison.

Memorial remarks were then read upon the deaths of Drs. Henry C. Houghton and Hayes C. French.

Dr. George W. McDowell read a sketch of Dr. Houghton's life, and the secretary pro tem. read the report of Dr. Francis B. Kellogg upon the death of Dr. Hayes C. French.

DR. HENRY CLARKE HOUGHTON.

Dr. Henry Clarke Houghton, an honored member of this Society, died suddenly at his residence in New York city on Sunday, December 1st, 1901. He was born in Roxbury, Mass., sixty-four years ago, receiving his early education in the Roxbury public schools and in the Bridgewater Normal School. He began the study of medicine in the Portland School of Medical Instruction, and later entered the Medical Department of the New York University, from which he received the degree of M. D. in 1867. For two years before beginning the study of medicine he taught natural science in the North Yarmouth Academy, at Yarmouth, Maine, and before the conclusion of his medical studies he served at the front during the last two years of the Civil War on the United States Christian Commission. Turning his attention to Otology early in his medical career, he was appointed on the staff of the New York Ophthalmic Hospital in 1868, doing active service for more than thirty years. He was an enthusiastic believer in the efficacy of potentized drugs, as applied to aural diseases, and embodied the results of his observations of cases treated according to Homœopathic principles in his "Lectures on Clinical Otology," published a number of years ago. During the later years of his life he became greatly interested in the treatment of catarrhal diseases of the middle ear by means of mechanical massage and made many experiments with musical instruments of the organ type in his endeavor to solve this problem.

At the time of his death he was Professor of Otology in the New York Homœopathic Medical College, Surgeon to the New York Ophthalmic Hospital, a Senior in the American Institute of Homœopathy and an honorary member of this Society.

GEO. W. MCDOWELL.

HAYES C. FRENCH, M. D.

It is our sad duty to record the death, since our last meeting, of one of our most eminent and useful members, Dr. Hayes C. French, of San Francisco.

Dr. French was born in England in 1840 and came to America when

seven years of age. While living with his father in the Western Reserve of Ohio, he was, by him, trained in the mechanical department of the jewelry business; a training which in after years was of inestimable value to him, since it emancipated him to a considerable extent from the maker and repairer of surgical instruments. But the occupation of a jeweller could not hold a man of Dr. French's ability. It served, however, to further his more ambitious aims. By its means he was enabled to gratify his ambition in the direction of a liberal education and spent two years in Oberlin College and two more in the Ohio Wesleyan University. In 1859 he took up the study of medicine under an able preceptor of the old school and attended lectures for two years at Ann Arbor, Michigan. In the fall of '62 he entered the army with the Seventeenth Michigan Volunteer Infantry, of which he was first Hospital Steward and afterwards Assistant Surgeon. In 1864 he returned to Ann Arbor, and graduated from the medical department of the University of Michigan in '65. In 1870 he assisted in the organization of Bennett Medical College, of Chicago, in which he filled the chair of Professor of Physiology and Hygiene for two years. He subsequently delivered Therapeutic Lectures at Macon, Georgia. Up to 1874, Dr. French vigorously opposed the teachings of Homœopathy. From the time of his conversion, however, he became as enthusiastic in its favor as he had been violent in his opposition. In the winter of '74 he delivered a course of lectures in the Homœopathic College at Cleveland, and at the same time entered the office of Dr. W. A. Phillips, its Professor of Diseases of the Eye and Ear. He then went to New York, and graduated from the New York Ophthalmic College in the spring of 1878. He immediately removed to San Francisco, where he opened offices with Dr. A. C. Peterson, they being at that time the first and only Homœopathic specialists upon the Pacific Coast.

In 1882 he helped to organize, and became one of the first nine Directors of the "Hahnemann Hospital and College," being elected Registrar for the second year. He also filled the chair of Ophthalmology and Otology for many years, and many of the younger generation of Oculists and Aurists, of this and other States, were graduated under his skillful teaching.

During the twenty-one years he spent in the practice of his chosen profession, on this coast, he held many offices of honor and trust in the Homœopathic School of Medicine, being twice elected as Presi-

dent of the "State Society" and going as its representative several times to the "American Institute."

About three years ago, Dr. French was stricken with paralysis, which rendered him entirely helpless for over a year, and, though able for the past two years to go about, he was never well enough to resume the practice of medicine, and when the final summons came it was not wholly unexpected.

Dr. French was married in 1878 in Cleveland, Ohio, to Miss Rose Morgan, a young school teacher of that city, and had three children, two of whom, with his widow, survive him; his only son having died when a boy of five years. Dr. French was one of the kindest, most generous-hearted men that ever lived, and will long be remembered among the poor and sorrowing for his open-handed and sympathetic generosity.

In the days of his prosperity he gave liberally to every good cause and work, and never refused his time nor labor to those needing his assistance, though often repaid only by thanks and prayers. In the cause of religion, as in all else, he was an enthusiast, and his beliefs entered into his everyday, professional life very largely.

The cause of Homœopathy on this coast has lost one of its strongest supporters and ablest representatives in Dr. French. When a young man of seventeen, he began writing for the newspapers and magazines short stories and poems, and was through all the succeeding years a prolific writer. He has left behind him many beautiful poems worthy of immortality, and the manuscripts of several text-books on his chosen specialty. For many years he helped to edit and wrote many articles for the Pacific Coast Homœopathic Medical Journal.

In closing this short sketch of Dr. French, I cannot refrain from quoting the lines written by himself in anticipation of his approaching farewell:

Good night! Lie down in peace, thine earth life done,
  Tomorrow thou shalt rise again to find
Release from bands that held thy prisoned soul,
  And soar to heights, before by thee unknown.
Through doors of night we pass to life and light,
  And hope's fruition under warmer skies:
Through death alone thou findst relief from pain,
  And all the hampering forces of the flesh:
Freed from the leash of dull mortality,
  Thy weary spirit rests at last in God.

FRANCIS B. KELLOGG.

Dr. Howard P. Bellows then submitted the report of the Committee on Drug-Proving as follows:

REPORT OF THE COMMITTEE ON THE TEST-PROVING.

Mr. President and Fellow-Members:—

The following report is made on behalf of the committee having in charge the test-proving, which is being made under the auspices of this society:

It will be remembered that immediately after the first report of this committee was submitted, at our last meeting, a donation of $50 was made by Dr. A. B. Norton, as editor of the Homœopathic Eye, Ear and Throat Journal, towards meeting the general expenses of this proving. Two days after our society adjourned our parent society, the American Institute of Homœopathy, took up the matter of our proving, and extended to us, not only its hearty endorsement, but also aid of the most practical and substantial sort in accordance with the following unanimous vote: "That a committee of three be appointed by the chair to co-operate with the American Homœopathic O., O. and L. Society in carrying out the test-proving which that society has undertaken; and that the sum of $300 be appropriated from our treasury and placed at the disposal of the general director of that proving, to be used in defraying the expenses incurred."

With funds thus provided the more practical work of preparation was begun. Arrangements were made for an ample supply of the tincture of the drug which was to be proved. This was duly prepared in strict accordance with the directions contained in the Pharmacopœia of the American Institute of Homœopathy. It was received under seal from the maker, and was submitted for assay to Prof. Wilbur L. Saville, of the Massachusetts College of Pharmacy. His report places the question of its purity beyond doubt and establishes the exact strength of the preparation which we are using.

In order to secure uniformity in the results of the proving in various cities, and also to secure such classification of results that they may be readily and accurately collated when received, the next task was to prepare a concise set of directions for the use of the local directors, and a complete set of blank forms for the use of the special examiners upon the various boards. Such a complete set is on exhibition in the hands of Dr. Swan, and may be examined by you at any time during our meeting. It consists of fourteen distinct parts, or fascicles—one for each examiner. For each prover a separate set of

forms is provided, and this admits of a satisfactory grouping and permanent classification and preservation in future, so that at any time these records will be available for the study or verification of the symptoms obtained. It was only after many weeks of earnest work, and many consultations on the part of our colleagues, that the material for these forms was provided. After this, it was no small labor to cast each part in definite arrangement for printing. Each set of forms contains 108 printed pages, in addition to the blank sheets interleaved. To save expense this printing was entirely done by the mimeograph process, in a room adjoining your director's office, and under his personal supervision at all times. The best idea of this part of the work will be conveyed by the statement that 18,000 sheets of paper were used in the preparation of these sets of examiner's forms.

Upon their completion a full sample set was forwarded to each of the local directors of the proving in New York, Brooklyn, Chicago, Philadelphia, St. Louis, Boston, Baltimore, Cincinnati, Buffalo, Cleveland, Detroit and Washington; also, one to Dr. W. A. Dewey, of Ann Arbor, the chairman of the Co-operating Committee of the American Institute; another to Dr. Geo. Royal, of Des Moines, the second member of the Institute Committee—the third member being Dr. J. B. Gregg Custis, our local director in Washington. Dr. Royal subsequently organized a Proving Board at Iowa City, and himself became its director, and has done most efficient service. Finally a set of forms was forwarded to the professor of Materia Medica at San Francisco, and one to Dr. H. W. Hoyt, of Rochester, who is actively engaged in the formation of a Proving Board among the staff officers of the hospital in that city. In all sixteen sample sets of the examiner's forms were thus distributed.

In response requisitions for sets for actual proving were received from New York, Brooklyn, Philadelphia, St. Louis, Boston, Cleveland and Iowa City—in all seventy full sets being thus supplied to seven boards. The latest returns from the directors of these boards show twenty-five provings actually carried through and completed in accordance with the plan; five incomplete provings, which were abandoned at various stages, but which will yield a few symptoms, and seven provings still in progress at the present time. The balance of the seventy sets requisitioned represents disappointments, and the cause of disappointment is the dependence of some directors upon the promises of unpaid volunteer students. When it was found by these students that so much time was required for the special examinations

they simply withdrew. This result was hastened by the attitude of some of the examiners themselves, who required the students to present themselves for their tests in office hours and await their turn. Instances were reported to me where students were kept waiting in this way for two hours or more. This is surely an injustice to the prover, and also to the other special examiners, whose arrangements are thus completely overthrown. The whole matter of disappointment from student provers comes back to the plain assertion, made in the original statement of our plan of proving, that students are *not available* as provers while they are in attendance upon their lectures and college work. The disappointments thus far experienced amount simply to so many demonstrations of facts, which were plainly stated at the outset, and are in no sense surprises. Another fact which has been demonstrated is, that unless provers are receiving payment, their sense of responsibility is very light and their agreements are very easily set aside. To the average person even a small payment carries with it the sense of a contract and makes his engagements seem more binding. The importance of the examiners seeing the provers by appointment, instead of keeping them waiting during office hours, is also practically demonstrated. The whole proving lasts but three weeks; the routine examinations occur but once, twice or three times a week, and require, on an average, but three or four minutes each. A little effort on the part of the examiner to reach his office on certain days a half hour in advance of his usual office hours, or to set aside a half hour for this purpose in the course of the day, outside of office hours, is all that is required, and this surely is not too much to ask of the busiest man in such a cause. When this course has been followed, when the provers have been paid, and when they are not students in active attendance upon college courses, the work has in all reported instances gone smoothly, and the results have been all that were anticipated.

And now as to these results I cannot do better than to submit the report of our local director in Boston, Dr. E. P. Colby: "June 10th, 1902: The first series of provings in this district having been completed, I think the following brief summary may be of interest: Five provers were employed, including both sexes, and the plan laid out in the prospectus was followed as rigidly as possible. For manifest reasons I will say nothing of the dosage. There resulted 125 well-established symptoms, of which 65 were subjective and 60 objective. Of the objective symptoms at least one-half would not have been detected had it not been for the routine examinations of the specialist ex-

aminers, as they produced no subjective symptoms leading to their recognition by the prover. Divided among the examiners the list of symptoms is as follows:

Director (general)	Objective	3	Subjective	37	40
Eyes	"	6	"	2	8
Ears	"	14	"	13	27
Nose and Throat	"	6	"	7	13
Skin	"	0	"	2	2
Genito-urin., female	"	1	"	1	2
Urine	"	11	"	0	11
Nervous system	"	4	"	3	7
Physiological tests	"	12	"	0	12
Blood exam.	"	3	"	0	3

The manner in which several of the symptoms were duplicated (or more than duplicated) leads one to look upon the record as one of great value."

The idea is held by some of our colleagues who are working with us upon this proving (and is doubtless held by many more who as yet have not actively joined the work) that the examination of the provers by one competent man who directs the proving is sufficient, and would save much time, trouble and expense to all concerned—the provers being referred by the directors to the special examiners for the verification and further testing of special symptoms when they actually arise. To those holding these views the following statement is made, in addition to the comment of Dr. Colby: In the course of the routine examination of the ears in the Boston provings just reported there were noted on two successive dates eighteen symptoms of great practical value, a good proportion of these being objective symptoms of the plainest possible description. Here was an opportunity for a practical test, and with this end in view the records made by the director upon the two dates referred to were carefully examined to ascertain how many of these symptoms had been noted by him. They were found to be absolutely blank as regards the ears upon both dates. No statement whatever of their condition had been made to him, and his questions had elicited none—and a more careful questioner is not engaged anywhere in this work. In other words, but for the plan of routine examinations by the special examiner, which is characterized as unnecessary, every one of these valuable symptoms would have been lost.

There is one direction in which the plan upon which we are working can be still further strengthened and its scientific character developed; that is, to institute a series of experiments to determine whether the drug whose action we are testing is capable of producing

changes in animal organs and tissues, and, if so, to ascertain and record the exact extent and nature of these changes. It is a pleasure to announce that definite arrangements for a series of experiments of this nature have been concluded, and that if characteristic tissue changes are demonstrated they will be recorded and their publication made possible by means of micro-photography. The colleague who has so kindly consented to carry out this important work is Dr. S. C. Fuller, the pathologist of the Westborough Insane Hospital in Massachusetts, and the experiments will be conducted in the laboratory of that institution.

And now, a word as to the future: This test-proving is going right on. Some of our boards which have as yet done no work are raising money, which in some places has been given generously by State and local societies and by individuals, and are perfecting their organization and getting ready to begin provings in the fall. They will profit by the experiences of the boards which have already begun the work. These older boards, our pioneers, by virtue of these same experiences, are in a position to give us more provings of much greater value than the first undertaken. The result is going to be a success, which will many times repay all the labor and vexation and self-sacrifice of the friends of this movement, who have given it such earnest and such able support.

It only remains, Mr. President, to ask more time for this committee in which to complete its work, and to suggest that since all the results may be in hand before we meet again, it may be wise, at this time, to make some provision for their publication.

Respectfully submitted,

HOWARD P. BELLOWS, M. D.,
General Director.

June 16, 1902.

After this report was received the following motion was made by Dr. W. R. King, of Washington, and carried by unanimous vote of the society:

Moved—That the General Director of our test-proving be authorized to publish the results of this proving as soon as they are complete—the publication to be issued in the name of this society. Also, that he be authorized to send a presentation copy of this publication to the editor of every homœopathic journal in this country and abroad, and to advertise it in any manner which is customary. Also, that the price of this publication be fixed, as nearly as may be, with reference to

covering the actual expense incurred. Also, that any deficit that may remain on account of this publication shall be made good by this society to the amount of $100, and that any profits which may accrue therefrom shall be appropriated by this society to the advancement of drug-proving.

Dr. John B. Garrison made a verbal report of the Committee on Transportation.

Following Dr. Garrison's report the Board of Censors, through their chairman, Dr. J. N. Anderson, recommended the election of ten physicians:

Dr. Dean Wentworth Myers, Ann Arbor, Mich.
Dr. Wm. Casper Cook, Pittsburg, Pa.
Dr. Erle B. Woodward, Lincoln, Neb.
Dr. William H. Phillips, Cleveland, Ohio.
Dr. John Holbrook Shaw, Plymouth, Mass.
Dr. John Stover, Chicago, Ill.
Dr. Willard B. Croft, Medina, Ohio.
Dr. Carl H. Rust, Cleveland, Ohio.
Dr. George Martin McBean, Chicago, Ill.
Dr. J. B. S. King, Chicago, Ill.

The secretary pro tem. was instructed by vote of the society to cast a ballot for these applicants for membership, which was done in accordance with the wishes of the members.

Dr. Dowling then read the resignations of Dr. E. Rodney Fiske, of Brooklyn, and Dr. George H. Talbot, of Newtonville.

Dr. A. B. Norton moved their acceptance, and the society so ordered.

The president then said: "The Nomination Committee is now ready to report."

The following nominations were presented:

President, Dr. George B. Rice, Boston.
First Vice-President, Dr. Roy S. Copeland, Ann Arbor.
Second Vice-President, Dr. Wm. W. Blair, Pittsburg.
Secretary, Dr. J. Ivimey Dowling, Albany.
Treasurer, Dr. Geo. W. McDowell, New York.

Board of Censors, Dr. Irving Townsend, New York; Dr. Fred. D. Lewis, Buffalo; Dr. E. L. Mann, St. Paul; Dr. H. S. Weaver, Philadelphia; Dr. D. A. Strickler, Denver.

The society directed the secretary pro tem. to cast a vote electing the candidates to office.

Geo. B. Rice, M. D.: Ladies and Gentlemen—I appreciate very highly the honor you have conferred upon me, and I realize that if I can direct the affairs of the society with the same success and ability that have been manifested in the past, by the former presidents and the present incumbent, I shall be glad. I distrust my power to do this, but I assure you that the society shall have my best energy and all my ability in this direction. I ask all the members to help me in every way possible, for after all the success of a society depends upon the members and not upon the president and officers solely. Give me the same loyalty and enthusiastic spirit that you have in the past.

I am very proud of this society for several reasons; it does a larger mass of good, practical, scientific work than any other society that I know of, but I am proud of it chiefly on account of this scheme of drug-proving carried out on a scientific basis.

I think we shall live to see the time when it shall be considered a high honor to have belonged to it during this period of valuable scientific work. I thank you.

T. M. Stewart, M. D.: The Auditing Committee are ready to report. We have examined the books of the Treasurer, all the accounts and vouchers, and found them correct.

G. W. McDowell, M. D.: Among certain unpleasant things the Treasurer has to do, the most important one is the collection of dues. I hope the members will all remember this important part of my duties. We have many expenses ahead, and if we are to get through without financial embarrassment the dues will have to be paid. I believe it is the law of the society that those who are back in their dues for three years may be dropped from the list.

President: That is true, but I suggest that there may be cases about which the Executive Committee should have some discretionary power.

Geo. A. Shepard, M. D.: Mr. President and Ladies and Gentlemen—This year we have had a program of great length and interest, consisting of fifty-six or fifty-seven papers; so many good papers can not be appreciated nor suitably discussed in the length of time at our disposal. It would be a good thing to have a resolution passed at this time to restrict the number of papers, so that there may be more time for discussion. The interest of these meetings rests as much or more in the spontaneous discussion than in the papers. One of the chief uses of the latter is to excite interesting discussion. A paper may be in itself poor and yet excite a discussion that contains a great deal of meat.

Many men of wide experience refrain from speaking on account of the lack of time.

I do not care to suggest any particular number of papers; that might be left to the Executive Committee, but some restriction there should be.

President: For the present long program I am afraid I am somewhat responsible, for I spent a good deal of time in drumming up papers. There is a feeling among the officers that they shall excell the previous meeting in every way possible, and, among other things, in the number of papers. I think that some such restriction would be a wise one. Some papers are promised, but fail to appear, so that we feel that we had better have a few too many than fall short. As a matter of fact and experience, there have never been more than thirty papers read at any of our meetings. Thirty-five papers would be a fair estimate of what we could do, and do well, at a single meeting.

Geo. A. Shepard, M. D.: I move that the number of papers to be read at our next meeting be restricted. Seconded.

President: Are there any remarks?

Wm. R. King, M. D.: My experience several years ago when President was that it was one thing to get promises of papers, but quite a different thing to get the papers, and I believe that in making a program of fifty papers you are liable to get about twenty-five, but you might get the whole fifty. This would make great uncertainty, and it is going to be difficult to get it just right. We have always finished all the papers where the author or discussor has been present. I see no objections to going on as we are, the papers where the author is not present being read by title. They are of value to us all when reviewed in our Transactions, and in this way we save enough of material.

I fully realize that the discussions are the most important and interesting part of our meetings, and that it would be highly desirable to have them in full rather than be cramped for time by an overplus of papers.

A. B. Norton, M. D.: How are you going to limit the program to any particular number of papers beforehand? I think that this discussion has expressed the desire of the members, and the incoming President and the Executive Committee can be trusted to carry out our ideas.

I would, therefore, like to amend the motion of Dr. Shepard by add-

ing the words, "the details to be left to the judgment of the Executive Committee." Accepted by Dr. Shepard and carried.

C. Joseph Swan, M. D.: I simply want to remark that if the papers are limited to, say, thirty, and the members thoroughly understand it, they will feel the responsibility and have them on hand.

President: Very nearly all the papers of this program were in our hands before the meeting. Almost every member who agreed to write a paper did so, and sent the paper on. The thing we wanted to get at was whether the society thinks that the program should be limited. I am sure that the next President will have some of his troubles alleviated by it. If there are no further remarks, I will put the motion.

All in favor of the motion, as amended, will say, aye.

Contrary, no.

The motion is carried as amended.

Geo. B. Rice, M. D.: It would please me very much if the members would express some opinion as to the actual number of papers.

Harold Wilson, M. D.: I do think we might state a number to act as a guide, even if it is a matter entirely within the discretion of the committee. I personally would like to state that I would not feel aggrieved if I were not asked for a paper, and I do not think there is one at this table who would feel aggrieved. I would agree to be left out without any feeling about it. If Dr. Rice could feel that we were not self-seeking, it would give him greater freedom in selecting authors.

The business of the evening having been completed, the society adjourned to the following morning.

SECOND DAY—MORNING SESSION.

The meeting was called to order by President Fellows at 9:40 A. M. During the session there were 53 members and 59 visitors present.

The reading of papers was taken up in regular order, and after the presentation of the paper by Dr. Rice the Committee on President's Address reported as follows:

Your committee to whom the president's address was referred beg leave to report that they have listened to and carefully re-read with pleasure this fine discussion and resume of the salient and important points of the address so admirably put before us.

We wish to commend all of the suggestions made in the address, which are very evidently the result of much thought and careful consideration concerning the needs and requirements of our association.

We especially favor the suggestions of change of Art. 2, Sec. 1, of our by-laws in conformity with the recommendation offered, and earnestly advise its adoption.

JAMES A. CAMPBELL,
J. N. ANDERSON,
D. A. MACLACHLAN.

After the society had adopted the report, the president read the following telegram from Dr. Schenck:

Brooklyn, N. Y., June 16th.

Dr. C. G. Fellow, Colonial Hotel, Cleveland, O.—Congratulations and best wishes for a success of the banquet. My only regret is my enforced absence. DR. H. D. SCHENCK.

The reading of papers was then resumed until adjournment at 1 P. M.

SECOND DAY—AFTERNOON SESSION.

The meeting was called to order by President Fellows at 2:30 P. M. During the afternoon there were present 42 members and 68 visitors.

The reading of papers continued until 5 P. M., when the meeting adjourned until the next day at 3:30 P. M.

THIRD DAY—AFTERNOON SESSION

The meeting was called to order by Second Vice-President Rumsey at 3:30 P. M. During this session there were 47 members and 25 visitors in evidence.

After the reading of remaining papers the president submitted the names of three applicants for membership. The censors having approved the names, they were elected by the society: Drs. Joseph F. Roe, Binghamton, N. Y.; Charles H. Gilbert, Rushville, Indiana; W. P. McGibbon, Chicago, Ill.

After thanking the members for their loyal support, Dr. Fellows entertained a motion for adjournment, and the society adjourned sine die at 6 P. M.

J. IVIMEY DOWLING,
Secretary Pro Tem.

PRESIDENT'S ADDRESS.

C. GURNEE FELLOWS, M. D.,

Chicago.

IN reviewing the work of this Society for the year, I wish to express my thanks to the members who have contributed to make the program so full and satisfactory, and to the Secretary for his labor, which has covered so much ground and been of great assistance. His labors have helped very materially to make our meeting successful, and I would suggest that, as a Society, we tender him our sincere regret at his sickness, and offer him our united good wishes for a speedy recovery.

I will not go into the medical progress of the year, for that will be taken up by the scientific papers, nor are there many suggestions in the way of changes for the Society.

In trying to devise some possible scheme for the further development of a successful meeting, it has occurred to me that we might select an hour at some definite time, and, without specially prepared papers, devote that time to the report of unsuccessful cases. Each of us is often at his wit's end and needs the personal experience of his friends about things not touched in text-books or journals, and by bringing these cases before the convention in an informal way and hearing the suggestions of our conferrees I believe that we might all gain by the discussion elicited.

It is to be regretted that we cannot see each other's work. Such observation gives an entirely different idea than simply the description or the phrase, "an uninterrupted recovery." The very handling of a knife, the prescription of a remedy, the accurate observation of the condition in which it was prescribed, all mean much more to a clinical observer than the simple statement of the fact. Hence, of course, hospital work is in a way better than convention attendance, but both together make up the course of instruction that as practitioners we are bound to maintain. The following of cases during their treatment or after operation often leads to very different opinions as to their value, for we often learn about failures in our own practice or those of our friends which are not always published with the same freedom that are our successes. For instance, I saw a foreign operator do dozens of simple cataract extractions, very pretty to

look at and successful as to their performance; but in the wards, days afterwards, I saw hernias of the iris, occluded pupils and other accidents, which, though not concealed, were not proclaimed, and this same operator dropped sponges upon the table and floor which were immediately used, after shaking them off, to mop out an orbit from which had just been removed a human eye. Such lessons are not without their practical value.

In my correspondence with members this year the fact has been apparent that they hesitate to write, believing that there is demanded some long, complete, scientific treatise. Now, although these scientific papers are desirable, and at some time or other essential, at such a meeting as this the clinical idea should be ever uppermost; therefore, the clinical report of cases, with practical suggestions derived therefrom, is of equal value with the scientific side of a subject.

A number of our men have refused to write because of inexperience or a rush of business, and yet I know that they could furnish matters of extreme interest to us who are present if they were not either too timid or too selfish. It is a fact apparent to us all that the busy men have the most time for writing, attending conventions and helping along in medical matters, so that the excuse of being too busy is hardly accepted as the truth when urged to take a part in making the meetings of our national society successful. One who does not contribute an article or discussion is apt to obtain less value from a meeting than one who is actively engaged and feels some responsibility.

The convention idea is a good one. We broaden our view and learn from the men more expert or of greater experience than ourselves. In some of the conventions that I have attended there have been papers above the heads of the audience. They demanded careful reading and study, rather than being simply listened to the short time of their delivery. In the preparation of papers for a society meeting, careful attention to details is essential. Those who have not been familiar with the subject could hardly be expected to be satisfied with the final results without going through the actual steps which led to the final conclusions, and these preliminary steps with which the original writer has himself become familiar must be taken by the man who undertakes treatment by the new method before he can himself judge of their value. No two minds work alike. As a class of artists drawing from the same model produces each a perfect picture as he sees it, and no two are alike, so in our work,—our views may vary and yet each have correct ideas, but, as an artist is criticised for his technique,

so the general criticism of our papers and the discussion elicited is of value to others working in the same field, although not having worked upon the same subject.

There is only one point in reference to a change in the By-Laws that especially deserves our attention. Art. 2, Sec. 1, reads: "The officers shall be elected by ballot at each annual meeting of the Society, and shall enter upon their respective duties the first day of January following." The President would suggest that this latter clause be changed to read as follows: "And shall enter upon their respective duties immediately after the close of the annual session."

If any reasons are necessary as to why this suggestion is made, they are as follows: The President, who has just closed a long campaign of letter-writing and paper-begging, having no further duties to perform, ceases to work actively, and the President-elect, feeling that his term of office does not commence for six months, feels no special responsibility until nearer the time of his assuming office, and there is practically six months lost, whereas the success of the next meeting depends upon the officers-elect, and plans well matured, correspondence early instituted, and the lapse of time before the coming meeting should all be in the interests of the newly-elected men. Each year the privilege of commencing work ahead of January 1st has been accorded to the newly-elected President, but I believe it should not be a privilege granted to commence on time, but a duty required, and this suggested change, I believe, would meet the requirements.

Modern practice in ophthalmology is changing from day to day. The invention of new instruments of precision, both in the field of diagnosis and that of treatment; the different methods of obtaining the same result and the constant seeking after better appliances keep us ever on the alert for that which is best, for the vital point is always—can we do more than we are doing? can we get better results? are there facts or possibilities that will help us to maintain or restore sight, hearing, breathing, speech?

As belonging to a distinctive therapeutic school, our thoughts ought to be, and I believe are, of the best. Littleness is almost unknown in our profession. The emoluments that come are acceptable, but the physician whose heart is in his work would rarely refuse his best efforts to a suffering patient, and as seldom, if successful, would he give up his profession for an even more alluring business life. It is a pleasure to know, it is happiness to do. When in school, after hours of toil, we unravelled a Greek sentence, we felt buoyed up. When

we computed an eclipse, we felt repaid for the loss of sleep. When we trace an effect of disease to its cause, we feel on the road to success. When we operate or prescribe and cure our patients, we are satisfied with our results, and feel a grateful appreciation in the hearts of our clientele.

Many things contribute to our success,—a trained mind, a steady hand, congenial surroundings, grateful patients and the possession of personal friends. We are dependent upon many things which can militate to our detriment or our final success.

The hospital idea is one of recent development, and one the most of us appreciate highly. To have a patient under constant trained care, with the surroundings of the sort which are conducive to good results, with our aseptic and antiseptic rooms and instruments, all these things have come to be everyday necessities.

Among our special friends and necessary assistants, we class the modern trained nurse. When our work is done, and our orders given, the details must be left to her. The applications, medicines, drops, etc., which we have proven to be the thing called for, must be faithfully administered, or our success is jeopardized. More faithful than a member of the family, as interested in the results as we ourselves, she becomes a necessary part, and in her our trust is placed.

A little thing may make or mar our standing in a community. There is no place as in our chosen specialty where the little counts for so much. Many of our examinations reveal nothing to an observer, be he a medical or layman. One eye only may be behind the ophthalmoscope, otoscope and laryngoscope, and even the operations deal with such minute anatomical structures that few can observe them, but lack of interest or attention to details at our hands leads not to happy results. It is said that "genius is an infinite capacity for taking pains." As special workers in our chosen field, we must take infinite pains. We care for the smaller organs; we use smaller instruments, but our experience is that the modern specialist or the medical painstaker may often become a medical genius. As an illustration of this painstaking, Booker Washington tells us how, when he presented himself at Hampton Institute, he was told to clean a recitation room. He swept it and dusted it, and then he swept and dusted it over again, and then a third and a fourth time. He dusted every bench and chair and window-ledge, so that after inspection by the teacher no dust was found. Washington was told he had successfully passed what he calls his entrance examination.

Not all men in positions of trust nowadays have begun by sweeping out the offices or banks, and worked their way to the top, but many who have attained the coveted positions are more worthy when they attain those results from having gotten their knowledge step by step and worked their way from the bottom to the top.

In dealing with our patients, this attention to details shows itself in many ways. For instance, after ever so careful an examination of a case of refraction, our work is nullified by the change of a dot, as we have all seen a .25 glass changed to a 2.50 by either careless writing on our part or careless reading on the part of the optician. I recently wrote a prescription for a pair of cylinders, one with an axis of 135° and the other of 45°, and the result should have been perfect, but I found out in course of time that a reversal of the sides in mounting had changed what should have been a successful issue into a dismal failure; so in writing prescriptions a careful investigation of all details becomes an essential feature of our practice.

We are very apt to overlook details which seem to us unimportant, and in giving instructions in a general way to patients we believe they know what we mean, whereas they take our instructions literally, doing what we say, but not doing things that are just as important because we do not happen to mention them. I remember once of telling a patient who was to come for enucleation to eat no food, and other essential details for preparation for chloroform narcosis. When we commenced the anæsthetic, and found him difficult to chloroform, we elicited the information, not that he had eaten anything, but that he had drunk five glasses of beer. He had possibly literally obeyed instructions, but the results were not all that we could have desired, and so the other day, after operating upon a patient for the removal of cataract, and ordering him not to eat, drink or move, he supposed he obeyed instructions, but I found that he persistently chewed tobacco in spite of all orders to the contrary, and although he did not in this case nullify the effects of the operation he ran a serious risk; so you could all contribute an experience which could go on indefinitely as to the necessity for taking pains, for details, and for watching the little things, but I think the facts will be accepted by you all.

There are a great many things in a physician's life, and as specialists we are still physicians, that are causes of worry and anxiety as well as satisfaction. The difficulty of proving our results and knowing that we have done all that could be done for our patients,—did it come from our special aptitude in prescribing? Was it the result of

operation? Could it have been due to the local or internal treatment? Was it homœopathic or surgical? These and other questions constantly present themselves.

The psychological element plays no unimportant part in our practice.

We are often on trial in the presence of our patients, and the first impression that we make upon them is of the utmost importance to ourselves. By our manner or expression, by some word or look, he is led to judge of our ability, and immediately conceives a confidence in our work which of itself is a predisposing aid towards our successful treatment of the case; so on the other hand, if the physician can read his patient, obtain the facts necessary to a true diagnosis, correlate all the ideas and findings in relation to the question at hand, he is a long way advanced in getting at the heart of the patient. Of course, we are all after results. We want to cure our patients in the safest, speediest manner; but if we are honest, we are not satisfied to do what we think of at the moment, but after the day is done our worry is as to whether we could not have done more,—whether there is anything we did not know. A man rarely weakens his own position by asking consultation. If placed rightly before the patient's mind, it shows an interest in the case, and if the doctor feels at all doubtful he strengthens his own position.

The life of a specialist is but the continuation of the educational process, the development and broadening of himself, the helping of, and being helped by, his professional confreres, the enlightenment of the public with whom he comes in contact. Each year at commencement time we hear the oft-repeated explanation that this is not the ending, but the beginning, of an educational life. It is hard for the student to believe that at the time, and especially is it true of the professional graduate, who would hardly admit that he did not know it all, but a few years of practice changes that idea and optimism is apt to give way to pessimism, as he sees theories thrown to the winds, typical cases take on atypical forms, well-indicated remedies fail to act and the unexpected happen. The awakening comes as a rude shock, and half of our medical men stand aside to let the work be done by others who have passed, or are passing, the ordeal. If he braces up, as one-half do, he wonders not why people are sick, but how they can possibly be well, and commences over again what he thought perhaps he had finished,—his own education. It does not all come from books,—experience is a hard, but a faithful, teacher. The student wonders if

there are other ideas to be obtained, and by poring over his books or magazines, or watching the work of others in the hospital, he tries to find out all that can be of service in his treatment of the sick. He asks himself if he has done all that could be done, or if he has done that which he should not have done. He compares authors, follows similar cases in the hospital, and often obtains the sequel in the morgue, but ends by knowing something. His time is never his own, for his work is never done, his knowledge never complete. He goes on year after year continuing the educational process.

The profession itself has changed greatly in regard to specialism. In earlier years the specialist was frowned upon as a man who set himself up above his fellows with a sort of "I am holier than thou" attitude, and his existence was in spite of, and not with the consent of, the general profession. Later he came to be accepted as a fact, his ability and necessity recognized and his position fairly secure.

The rush to specialism has perhaps been overdone, and in some localities they are now crying for the general practitioner and the family physician; but meanwhile the specialist has educated the profession; he has shown the necessity for his existence. He himself should first be a practicing physician, with an extended personal experience, if possible, and when to that general knowledge he has added that of an extended and exceptional study in his own particular field and comes to know "something of everything and everything of something" the profession will recognize that he is better qualified to act in individual cases; that he is not a bigot in medicine; that he does not think a part is greater than the whole, but can demonstrate from experience that from a part there are to be obtained facts and hints in diagnosis and prognosis and points in treatment which will help the general man to carry to a better issue his own troublesome cases. The general profession has learned to depend upon him and not ignore him.

Meanwhile the education of the public has been going on. This is an age of preventive medicine, and I believe that we are getting better results now, and will continue in the future, by teaching laymen and physicians how to keep their sight, preserve their hearing, as well as the other functions of the body. The ignorance as to special functions is rapidly disappearing, and the specialist has been responsible for much of this enlightenment. A few years ago specialists were only consulted after all others had failed, but now they are being called earlier, and even the public is recognizing their peculiar fitness. The specialist has taught the public the difference between an oculist and an optician,

not by Websterian differentiation, but by added helps, better results and surer prophecies; that the Oto-Rhino-Laryngologist is not busy with jaw-breaking and unintelligible word-making, but has a mission for the relief of pain, saving of functions, the prolonging of life. Our teachings are wider than we know. We become so used to our work that we think it is simple, and our knowledge trivial, but in talking to our patients and friends our remarks are treasured, our sayings quoted and passed from one to another, until whole communities know what we said or did, and all of this adds to, or detracts from, our reputation.

History is but the biography of the world's great men. No one of us can study the life of a great man without being impelled to nobler effort, to put aside the trivial obstacles and work only for the accomplishment of the desired result. A successful man was once asked "what helped you over the obstacles of life?" and he replied "the other obstacles." The biography of Helmholtz is one in point. Last year the Ophthalmic Section of the American Medical Association celebrated the fiftieth anniversary of the invention of the ophthalmoscope by Helmholtz, and the reading of the many contributions not only impressed us with his greatness, versatility and scientific attainment, but inspired us with a new feeling of love for our chosen specialty in medicine. It is not given to us all to be at the same time great physiologists and phychologists; to invent an instrument which alone would make us forever remembered; to add greatly to the scientific advancement of ophthalmology or enlighten educated otologists. We are not all "born great," nor do we "have greatness thrust upon us," but by the study of the lives of great men, and using their accomplished labors as our foundation stones, we are enabled to attain more than we otherwise could, and our reputation for success and capability arises from all this acquired education. The same features of greatness do not impress us all alike. I, for one, have often admired Napoleon, not so much for his great generalship as for his ability to do without sleep. Von Graefe's work seems to have lived more in his practical teachings, operations and clinical details, whereas Helmholtz worked out theories, and yet both are worthy of our greatest admiration. The skillful handling of a knife invented by another, the correct prescribing of a remedy proven by another, leads to as good results in the hands of a student who comes after as the master who has gone before. A physician must have as much confidence in his own ability to do as in his capacity for following the teachings of others.

Who would not be great? Who among *us* is to be the Helmholtz or the von Graefe of this new century?

THE TREATMENT OF IMMATURE CATARACTS.

BY ELMER JEFFERSON BISSELL, M. D.,

Rochester, N. Y.

THE crystalline lens of the human eye is being more widely studied than any other structure concerned in the act of vision.

Ophthalmologists have been striving for scientific accuracy regarding its histology, its changing form, density and refractive power from embryonic life to old age; its peculiarities of position and shape during accommodation; the manner of its nutrition as a non-vascular substance; the influences affecting its transparency; the structural and optical advantages of its removal in high degrees of myopia; and, lastly, the history, character and varieties of cataract—its most common pathological state.

From all this thought we should reasonably expect some therapeutic benefit to follow. Such has been the result in more accurate correction of optical defects, and clearer indication for, and improved technique of, the cataract operation. I believe, however, that these investigations have elicited facts, the analysis of which suggests the possibility of some rational, *non-surgical* treatment of *immature* cataract.

The "do-nothing" and "wait-until-you-can't-see" treatment of immature, senile cataracts which has been the traditional verdict of so many oculists for years, must surely, though it may be slowly, give place to a broader and a more specific consideration of all the possible local and general factors involved in the development of cataracts.

Here is a wide, and, I am sure, fruitful, field of research. More definite relationships are to be established, and the observations of many oculists must be compared. To this end I present to you my experience with immature cataracts; the line of treatment employed in many cases, with the reasons and theories therefor.

Such a small proportion of people past middle life have opacities of the crystalline lens of a character to be properly termed cataracts that when progressive opacity does occur it is fair to assume that it is not a necessary accompaniment of old age; and therefore abnormal influences are at work, other than senility, which, if recognizable, can probably be lessened or removed.

In the search for these "abnormal influences" it is necessary to inquire in detail into the habits and general physical condition of the patient. Whatever is found contrary to well-recognized conditions of good health I try to overcome. Surely that which is detrimental to the general health cannot be without some ill-influence on any one part of the body undergoing abnormal changes, although no direct relationship may be traceable. Acting on this theory, I believe it is important to give particular attention to the following points:—

Out-Door Life.—I have observed that many of my cataract cases have been living an in-door life in houses wrongly heated and improperly ventilated. As far as possible I correct this, and particularly urge upon them daily out-of-door exercise and plenty of fresh air in their sleeping rooms.

Drinking Water.—Regions especially rich in lime deposits have furnished me by far the largest number of cataract cases. I am sure that this is more than a mere coincidence, and though I cannot show a direct relation between a large quantity of lime in the water and the development of cataracts, yet it is well-known that an excess of mineral matter tends to indigestion, renal diseases, rhumatism, gout and aggravates arterial sclerosis. Therefore, indirectly at least, I believe that an excess of lime is a causative factor. Boiling will precipitate much of the calcium and magnesium carbonate, but does not affect the sulphate; the addition of sodium carbonate would tend to soften the water by precipitating the latter; but patients soon become lax in boiling and preparing it, so I think it better to have them drink filtered rain-water, or some suitable spring water, and partake of it freely. It seems to be an almost universal failing to take insufficient water into the system. When we remember that water should constitute seventy per cent. of the body weight, and that the elasticity and pliability of all the tissues of our body are dependent upon it, the importance of having our cataract cases drink a proper amount of suitable water is apparent.

Food.—The food should be carefully selected in all cases with regard to the general physical needs of the individual patient. It must necessarily vary, according as there may be discovered any abnormal condition of the kidneys, heart or other organs. Excessive use of salt or sugar I prohibit. Large quantities of these have produced cataracts in animals. Several of my cataract cases have been excessive users of salt, and in two I have—I believe—seen positive benefit follow the discontinuance of this article. The most plausible theory for the dele-

terious effect of too much salt is, that it retards or reverses the osmotic processes, which are essential to the nutrition of the lens.

Medicine.—Whatever medicine best meets the needs of a cataract case should be given. To intelligently prescribe for such cases the oculist must have a comprehensive knowledge of every departure from health which the patient and his examination may reveal. To this end the urine should be tested, the heart and blood vessels carefully examined. My observations have led me to the opinion that some degree of arterial sclerosis is a more frequent and potent factor in cataract cases than nephritis or diabetes. The time-limit on papers presented to this society prevents me from further consideration of this and many other points upon which much could be written.

If, however, there are no *general* indications for drugs, I would suggest to you two: *Secale cornutum* and *Naphthalin,* which many careful and observing ophthalmologists have declared will produce cataracts similar in character to the senile varieties. The literature on this point is abundant. If there is any virtue in the application of the law of similia to perverted metabolism, here are two drugs which should attract our attention. I have prescribed them separately, in the 3x attenuation, for many cases, but as other measures were usually employed at the same time my observations as to their power lack scientific value. The results, however, in the few cases which I have used them alone encourage me in the belief that they are of value.

In differentiating the two, I use *Naphthalin* in equatorial, cortical cataract, especially *when the lens is swollen;* and *Secale* in other cases, particularly if the patient shows signs of arterial sclerosis.

Laying aside, therefore, many symptoms in our Materia Medica which might suggest the presence of cataracts, but which are not founded on actual observation of the interior of the eye by experienced ophthalmologists, we must give to these two drugs a place of prominence; or repudiate our law and abandon our position that the proving of drugs under the guidance of specialists is to be desired. Of a certainty, these drugs will produce cataracts. This fact alone is a strong argument in support of the position that there are influences, other than trauma and senility, which can and do produce cataracts; and that if we will only search for these influences they will appear with increasing clearness when many minds are brought to the study of the problem.

In passing now to the consideration of the local treatment of imma-

Fig. I.

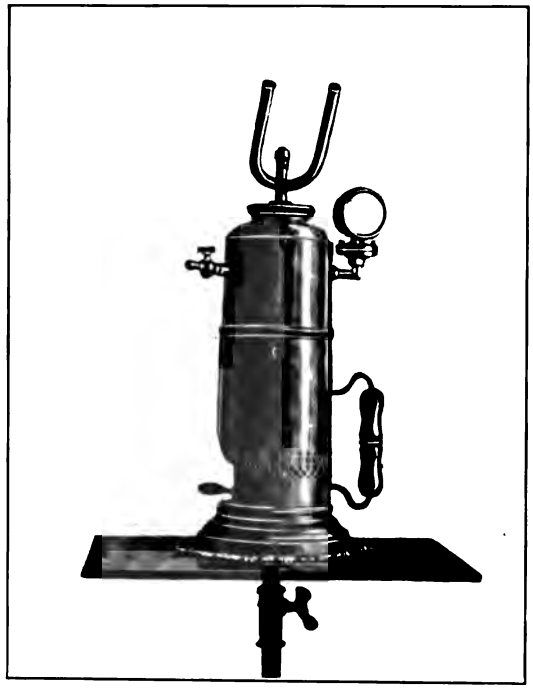
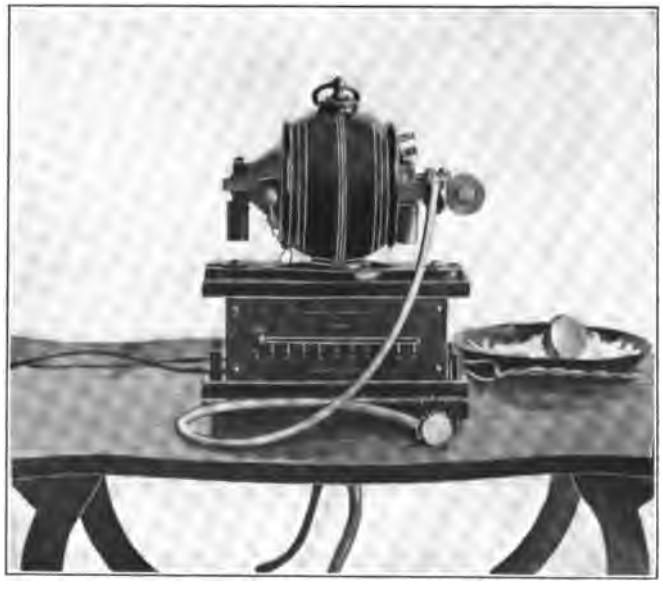


Fig. II.



ture cataracts, it is well to make clear the class of cases for which I would recommend the measures about to be described.

I exclude all cases in which the vision from opacities in the lens is less than $^{20}/_{200}$, and Jaeger No. 3, after appropriate optical correction, and I believe it is usually wiser to draw the line at V $^{20}/_{100}$. I also exclude the many cases of slight peripheral opacity which does not interfere with normal vision, and may remain stationary for years. It is well, however, to give a somewhat guarded prognosis even in these cases, and to have them, if possible, under observation once a year, for some of these "probably stationary" cases may progress. It is apparent, then, that excluding the cases as indicated I would only give local treatment to those whose vision is somewhat impaired and probably will gradually become more so unless some efficient means are employed to prevent it.

After a thorough examination of the eye, in which the condition of the fundus, and especially of the choroid, is noted, and a careful diagram of the cataract is made, I strive to work out as perfect an optical correction as possible. In many of these cases, as is well-known, there is apt to be considerable lenticular astigmia. From the very nature of the condition it is often quite difficult to determine what lens will give the best result, and in these lenticular astigmic cases relatively frequent changes of glasses may be necessary because of the varying clearness and density of the crystalline lens. To what extent uncorrected astigmia acts as a causative factor of cataracts may never be definitely determined, but it is a fact of some importance that the percentage of cataracts is very small among those who have used their eyes at close work for years with appropriate optical corrections. The frequency of cataracts, therefore, among those who have only moderately used their eyes at near vision suggested to me two measures which I have employed, and which I base on the theory that *the changing shape of the lens during accommodation greatly favors the nutritive, osmotic processes in its substance, and actually helps to maintain its transparency.*

I advise reading, or sewing, ten to fifteen minutes several times a day; and I supplement this by a sort of auto-massage of the lens by having the patient make an effort at forced accommodation on a dot one millimeter in diameter, held six to eight inches from the eyes; first looking at a distance, then alternately relaxing and contracting the ciliary muscle five to twenty times a day. Although the power of the lens to change its shape is greatly diminished at the age when cata-

racts usually begin, it is not entirely lost, and this systematic exercise of what power it has is in accordance with the physiological rules for stimulating local nutrition. Under this exercise I have seen the lens become somewhat clearer and the vision accordingly improved.

To still further stimulate local nutrition, I steam the eyes with the apparatus shown in Figure 1.

At first I prefer to give three treatments a week, then two, and finally one, until twenty to twenty-five treatments have been given. The two tubes of the apparatus are placed about four inches from the patient's eyes, and the temperature of the steam on reaching the eyes is about 100° F. to 105° F. Following the steaming I employ a rotary massage, with the fingers on the closed lids for a few minutes; then a vibratory massage, with the apparatus shown in Figure 2.

With the Wappler instrument adjusted for alternate suction and pressure, and with a thin piece of dental rubber over a tube three-quarters of an inch in diameter, a very gentle and regular massage can be given to the eyes. I apply this especially around the ciliary region, and terminate the treatment with one to three milliamperes of galvanism for ten minutes; applying the negative electrode to the neck, and over the eyes the positive electrode arranged in a binocular, self-retaining form.

Two questions now press for answers: First, do these measures stimulate local nutrition? Second, if they do, can we reasonably expect in suitable cases to retard, arrest or improve recent, lenticular opacities?

My observations have led me to answer these affirmatively.

For six years I have been employing the above measures as outlined, and though often requested to write upon this subject I have delayed until sufficient time had elapsed to satisfy myself that the results obtained were permanent.

I instructed all the cases treated to report once in six months; by this plan I kept them under careful observation, and only in one case did I find any increase in the cataracts, and in many there had been marked improvement since the discontinuance of the treatments. In twenty-five per cent. of the cases the vision was markedly improved, as, for example, from $^{20}/_{100}$ to $^{20}/_{30}$; in twenty-five per cent. it was moderately improved, and in fifty per cent. it was only slightly improved, or remained stationary. Even this latter result I look upon as highly satisfactory. It has been an almost universal verdict of those

cases that they are able to use their eyes with less fatigue than formerly.

I shall present a detailed report of cases in a subsequent paper, and so will content myself at this time with offering these suggestions and bare facts.

In conclusion, I plead for a more rational consideration than has usually been given to cases with immature, senile cataracts. Especially would I emphasize the importance of directing our attention and therapeutic resources to the general needs of these patients.

After reading his paper, Dr. Bissell exhibited the steaming and other apparatus spoken of in the paper, remarking as follows:

I have tried various medications in the steam, but have never been able to satisfy myself that they did any good, or that there was any difference in their effects over and above that of the simple steam. The continued heat and moisture is the effective agent, rather than any substance that you medicate it with. The effect produced is to stimulate local nutrition, which is in an impoverished condition, for the arteries here, as well as elsewhere in the body, are in an atheromatous or sclerosed condition. You may recognize this in the radial, temporal and sometimes in the carotid arteries.

Steaming the parts seems to be a rational way of meeting this condition, as far as it can be met locally. There is nothing new or peculiar about the electrode; it is arranged in this way simply to save the time of the assistant. The current varies from one to four milliamperes.

This is the arrangement on the Wappler instrument; by its aid we get a very delicate pressure massage. It is more delicate and regular than the finger, and of course does not tire the operator.

Now, I do not want to be misunderstood. I am not making any claim that this treatment is a cure for cataract; the sclerotic fibre cannot be changed or made different from what it has degenerated into; it is as incurable as old age and wrinkles, but the function of the part can be improved. As I have said, twenty-five per cent of my cases have exhibited a manifest improvement.

DISCUSSION.

W. A. Phillips, M. D.: The author of the paper has set us a most worthy example to follow. It is more interesting perhaps to pursue lines of study less obscure than this and which promise more prompt and definite results—studies requiring less time, patience and careful research; but the satisfaction and the benefit to be brought out of darkness may be considered ample compensation for the investiga-

tions, however long continued. As a notable example, we may call to mind the protracted labors of Donders in errors of refraction, a subject at one time quite as obscure as is the etiology of glaucoma or of cataract at the present time. Success along other lines may well lend encouragement for study along this.

As the author has suggested, senility, as such, does not probably play a signal part in the cause of hard cataract and may apparently safely be left out of the question; for the physiological changes peculiar to old age do not point to a disease condition, so far as we can see, with any essential differences of the processes of nutrition occurring between middle and advanced life; hence, it appears that we must look for the lens-changes in idiopathic deviations from the normal, as we would make research in other forms of morbid action.

That certain drugs will produce cataract furnishes a valuable hint in the direction to look for causes; but only a hint, as observation has taught that the proving of a drug does not always produce exactly the same group of symptoms in different persons; and, furthermore, that clinical experience must be added to provings to verify the value of the drug as regards its real value as a trustworthy agent. Still, the pathogenetic action of a drug must constitute the main proposition. If, now, systematic observations be made along the whole line, information will be obtained which will we trust show the initial changes. In this, as in other diseases, it is believed that if we as a profession could know all there is to be known about physiology united with all there is to be known about the various medicines used and to be used, each and every disease could be arrested before irreparable pathological changes would have time to occur; hence, something more than scrutiny of the lens and adjacent structures, together with the action of drugs, must constitute the investigations.

1.—Repeated analysis of the urine and of the blood with condition of the bloodvessels themselves.

2.—Knowledge of the kinds of food and drink used.

3.—A record of occupation and habits.

4.—Nervous disturbances.

These must all be taken into account.

In my own study of the subject, I must confess all of this was not done, and the results have not been all that could be desired—and, perhaps, they would not have been with all possible care; but it is evidently the direction in which our studies should be conducted.

That there are hopeful possibilities in eventually arriving at the cause of senile cataract is no doubt true; and, furthermore, it would seem drawing a conclusion from meagre data that there are also possibilities in the cure of cataract short of the heroic measures championed by the knife. These data are the few cases of spontaneous disappearance of even entirely mature cataracts. My own contribution to the number of cases that others have reported is that of an old gentleman over ninety years of age, a prominent business man of this city. The opacity had been developing for about six months before

a careful examination was made. The opacity steadily increased for another six months, when he was examined by a New York expert, who advised removal of the offending lens. The patient had a somewhat high grade of myopia, four dioptries, but no noticeable change in the myopic refraction had occurred for many years, and I attributed the discomfort he complained of in and about his eyes to the disturbance in vision occasioned by the opacity. The only remedy he was taking was *Gelsemium* 3d. In about six months from the time his vision began to improve the entire opacity had disappeared and he could see as well as before the trouble had asserted itself. The eye remained clear until the old gentleman's death, which occurred a few months later.

If normal physiological action can accomplish the restoration of a retrograde movement like this, has not the experience of the profession been sufficient to bring about the conviction that medicinal or other measures may be discovered that will do the same thing? Of course, as we all well know, few cases prove but little; yet if there were only one well-authenticated case like the above on record it would furnish a hint that we may do with drugs, attenuated or otherwise, what nature herself may do unaided. If concerted and systematic observations are persistently made along this line, it is confidently believed that more definite and most valuable deductions will reward the labor.

E. D. Brooks, M. D.: I notice that most books on refraction, and some that are not especially on refraction, make the statement that as soon as a person's vision becomes dimmed to the extent that they cannot see to read ordinary print by lamp light, he or she should at once be fitted with convex lenses, to enable the use of the eye to a larger extent than would otherwise be possible. I believe this to be bad advice, and I think the tenor of Dr. Bissell's paper bears me out in that idea. If the exercise of the apparatus of accommodation is one of the things that keeps off the formation of cataract, is it not wise to keep the accommodation active as far as possible by judicious exercise and rest, rather than to put it out of use forever by the use of convex lenses as soon as it becomes a little uncomfortable to read by lamp light.

From my observation and experience, I am of the opinion that the advent of presbyopia may be put off for a considerable period by refraining from the use of convex lenses, and, as I gather from Dr. Bissell's paper, at the same time delay or render less likely the formation of cataract. The exercise of any muscle tends to keep up its strength, and the ciliary muscle is not different from any other muscle in this respect. Therefore be not too quick to order lenses at the very first signs of slight presbyopia.

A. B. Norton, M. D.: This paper is of great interest to me, and I want to add just one experience that I have had during the past winter in the use of the high frequency form of electricity. I am not very well acquainted with the technicalities of this form of electricity, and will leave its explanation to those who know more about the subject.

It is a new application, or a new kind of current; one that has come to my notice quite recently, but it has been used in this one case with a great deal of satisfaction. The patient had immature cataract, with only $^{20}/_{100}$ vision. Under constant treatment for six weeks the vision improved to $^{20}/_{40}$, and the haziness of the lens also cleared up to a considerable extent. It is the only case in which I have been positive of improvement. The electricity was applied three times a week. As to the use of *Naphthalin,* twelve or fifteen years ago it was given a trial in a great many cases with absolutely no effect. My attention was first directed toward it by the accounts that poisonous doses produced cataracts, and it was given a thorough trial without the least encouragement for its further use.

Secale cornutum I have never used. Am sure, however, that, although I cannot claim to have improved cataract, I have held it in check, or prevented its progress in a great number of cases.

Bushrod W. James, M. D.: Do you apply the positive or negative current?

A. B. Norton, M. D.: I can't say as to that. The current comes through a glass vacuum tube, somewhat similar to the Crook's tube of an X-ray apparatus. It is sometimes called hyperstatic, and sometimes the high tension or high frequency current of electricity. The whole apparatus comes in a box about eight inches long and six or seven high; and is attached to the static machine. In the box are coiled up miles and miles of fine wire; the ordinary current from the battery passes through that wire before it reaches the patient's eye. I want to ask Dr. Bissell in regard to the use of his steaming apparatus, whether the patients are able to keep the eyes open or not.

Harold Wilson, M. D.: Two points of a critical nature arise in my mind. There has been a great deal of literature on this subject, and almost all that I have read have begun to investigate the subject at the wrong end, and in the wrong way. Before we can come to any scientific conclusion as to the results of treatment, we must have data concerning the natural history, the course, duration, progress, etc., of the disease, untouched and unmodified by either external applications or by internal treatment. This has not been done. We are so anxious to treat patients, and patients are so anxious to be treated, that this kind of study is very difficult to do. I have seen cases remain stationary under practically no treatment for eighteen years.

The second criticism that I want to make is that if we were all to follow the methods of Dr. Bissell, we would be no wiser at the end of ten years than we are now. When you multiply methods and means of treatment upon a case, you multiply doubt as to the benefit derived from any individual mode. By using massage, steaming, electrical applications, internal medication, dietetics and general hygiene upon the same case, you can never know, nor does Dr. Bissell know, which of the various means did the work, or how much is attributed to any one, or which are worthless.

My plea is for the study of cataract, unmodified by treatment, and

second for the study of various methods, one at a time. This must be the foundation for a rational understanding of the subject.

J. N. Anderson, M. D.: I should like to ask Dr. Bissell, when it became necessary to operate upon these cases, whether he found any extra trouble in the delivery of the lens. The reason I ask is because a physician who had had an opportunity to operate upon a number of cases, after they had been subjected to the treatment of massage, steaming, etc., or, as it was termed cured, by the absorption treatment, and in every such case he found the greatest difficulty in delivering the lens, owing to atrophy of the eye, brought on apparently by the treatment. I know nothing of this from personal experience, and simply want to ask Dr. Bissell if that has also been his experience.

G. A. Suffa, M. D.: I am not sure that I understand clearly about the duration of treatment. Did I understand you to say that a short course of this treatment would bring about improvement that would last a life time? How long is the treatment to be continued? How often is it to be repeated?

R. S. Copeland, M. D.: I agree fully with Dr. Bissell in reference to the lime salts entering into the etiology of cataract. I mentioned my belief several years ago at one of the meetings of this society, and since that time I have verified it by my subsequent experience and observation. By far the greater majority of my cases of cataract come from the limestone districts.

On the other hand, I disagree with the docton when he says that salt enters as a factor into the formation and development of this disease. In my neighborhood, where salt wells are numerous and salt plentiful, so as in all probability to be absorbed in various ways, cataract is almost unknown. Almost invariably my cataractous patients came from outside the salt area, and generally from limestone districts.

J. A. Campbell, M. D.: Some fifteen or eighteen years ago I gave a thorough trial of electricity in the galvanic form in my cases of cataract, and I could never satisfy myself that I obtained the least benefit from it. Let us not forget that there has been such a thing as a spontaneous cure of cataract. I have had under observation for a long time a case in a physician's wife living in my city. When she first came to me I made a diagnosis, and did no more than tell her to wait until it became ripe. After four years it began to improve rapidly, and at the present time it is nearly normal, without any treatment whatever. Of course, such happy results are not the rule, to put it very mildly.

Some years ago the late Dr. Burnett, of England, wrote a book on cataract. He took the position that the lesion was primarily in the connective tissue, and that it must be due to some scrofulous dyscrasia, and must be cured by anti-scrofulous remedies. Before sitting down I should like to ask if any of those present have had any experience with Succus Cineraria. For myself, I may say that I have never seen a case that was not injured by its use. If we can get anything that will stop the progression of cataract towards blindness, or tend to preserve and prolong vision, it would certainly be an admirable thing.

Our progress in knowledge concerning it, I believe, lies in this direction, namely, that cataract is a disease of the whole system, and not of the eye alone.

Bushrod W. James, M. D.: You will find the subject of Succus Cineraria thoroughly treated and considered in one of the volumes of the Transactions of this Society. I spent a great deal of time in preparing the article, writing to every member of this Society, and to various authors who had written about or mentioned it. I also got some information from a St. Louis firm. The general consensus of opinion seemed to be unfavorable, although it did benefit some cases.

I believe that the action of homœopathic remedies is potent enough to retard the progress of cataract. I have seen *Chimaphila umbellata* act very satisfactorily in this way. I have held cases in a stationary condition for years that, I believe, would have otherwise progressed to complete blindness. *Phosphorus* is sometimes useful; *Causticum* also, but as for the Succus Cineraria it does not do what has been claimed for it, and unfortunately it is advertised by some firms in a way that forces it to the attention of the laity and the general practitioner, and may result in harm.

G. F. Bagby, M. D.: About two years ago I used it with a fair amount of success, but afterwards I had a very unfavorable result with it, and since that I abandoned its use entirely. The case was a woman of about the age of seventy, who came to me with immature cataract and some general symptoms. I began using the Succus Cineraria and internal medication; all went well for six months, and I thought that I had stayed the progress of the disease. Then a facial erysipelas developed, the family physician was called in and treated her; but nothing could stop its progress, which was rapid, and she succumbed. It has been a question in my mind whether the Succus did not have something to do with the fatal attack. I did not know, but certainly I have not used it since. My experience with it showed me that it was very irritating in many cases, and with sensitive patients I could not urge them to the point of repeating the applications, owing to the pain that it caused. In giving a prognosis in any particular so many influences are at work, and so little is really known about the disease, that it certainly is a very difficult and uncertain matter.

W. R. King, M. D.: This subject has interested me exceedingly, and I have watched the literature upon it considerably. I found that the majority of reputable practitioners agreed that it was of slight and uncertain value. It was certainly a failure, according to these reports, and it is unfortunate that it is advertised in the somewhat unethical way that it is. I had two cases in which the vision was dimmed, but in neither of which was an operation advisable. In both of these cases the reputation of the Succus had reached the ears of the patients and their friends, and it was on their request that I undertook to use it. In both these instances the result was to bring about complete maturity in a comparatively brief period, about six weeks.

It answers one of the questions asked, that removal of these cata-

racts was entirely successful. Not one particle of effect in the way of absorption was I able to detect.

In superficial leucomatous conditions of the cornea one can readily conceive that a favorable effect might result, and I believe that these are the kinds of cataract that have been cured by its use. I think that we should make a close study of the accompanying symptoms in cataract. I have made a diagnosis of cataract by swelling of the lens, when the ophthalmoscope did not show a fleck in the lens. I told the other members of the family to look out for diminution of vision, and the result proved that I was correct. In two instances I have used *Naphthalin,* with, I think, good results in the direction of retarding their growth.

E. J. Bissell, M. D.: I am gratified at the amount of discussion that my paper has raised, and will endeavor to answer the questions proposed by the various gentlemen who have discussed the paper, Dr. Wilson's first, because I believe his adverse criticism to be the most vital. I expected it, and it is just, but he is not quite accurate when he says that the natural history of cataract has not been observed. On the continent, and especially in England, they have kept records for periods covering a space of ten years, and these records are accessible to all. It is true that at the end of ten years there was a respectable per cent. of cases in which the vision had not deteriorated, and that fact makes one somewhat diffident about bringing a paper of this kind before you. If, on the other hand, we can get improvement in twenty-five per cent. of our cases, as I have shown you can, I believe it is better to do it rather than wait until our hair is gray to find out the natural history of the disease.

I do not say to every patient forty years of age that has a slight fleck in the lens. "You have cataract." I make the diagnosis of cataract only when the vision is actually reduced, and also is worse than it was the year before. As to Dr. Campbell's criticism that cataract is a general, as well as a local disease, that is what I took particular pains to say and to illustrate in my treatment. It is the custom, I am sorry to say, of many physicians to make a diagnosis of cataract, and then let the patient go without any advice or treatment until sufficiently ripe to operate upon.

My paper was intended to counteract that bad practice. We should look after the general condition of those patients; we should regulate their diet and habits, and put them in the best possible condition for resisting the progressive character of the disease. As these cases do tend to progress, it gives us the natural history of the disease in a measure, and I am sure I can claim a greater measure of success than goes to the neglected ones. My attention was called to this class of cases in my practice, and I have tried to follow it out carefully and conscientiously. Remember, I am not saying that this is an absorption cure. I make no claim to clear up sclerosed lens fibre, but I do claim to improve the nutrition of the part, convey a more perfect pabulum to the lens, clear

up the milky fluid which bathes the interstices between the sclerosed fibres, and thus both improve and preserve the vision.

As to the multiple treatment, another criticism of Dr. Wilson's it is true, but I had a theory about it, and I was not content to trust the result of what I wanted to do to a single means. I used all the methods to effect my purpose that seemed to me reasonable. It is true that we are thereby prevented from knowing which does the work, and which, if any, are worthless.

My attention was first attracted to this line of work chiefly by old school men. Many, or most of you, have probably read the article by Dr. Risley, in which he took the position that the general health of the patient was of extreme importance. I was very careful in the text of my paper in regard to what claims I made for internal medication. I simply said here are two remedies in which records of poisonings and in one case the symptomatology seems to point them out as remedies that are likely to be of service and are worthy of experiment and investigation.

G. A. Suffa, M. D.: What about the length of the treatment?

E. J. Bissell, M. D.: Three times a week for about a month, then twice a week for the same time, and finally once a week. I treat only in those cases in which I am satisfied that there is progression. Twenty-five treatments is the most I have given in any single case. In regard to operations upon cases that have been through this treatment, I cannot say, for none of them have had to be operated upon yet. In only one case was the diminution of vision, and that was slight, something like a reduction from $^{20}/_{50}$ to $^{20}/_{70}$, so I cannot answer Dr. Anderson's question.

It is quite possible to increase an opacity by injudicious massage; it should be of the gentlest possible character. As to the case of salt, I cannot say with certainty; I simply ruled it out, because I wanted to eliminate everything that might conflict with my object, and it had been advanced that a too free use of salt tended to increase the specific gravity of the fluids of the body and thus prevent the absorption of pabulum.

THREE CASES OF CONGENITAL STRIDOR IN INFANTS.

BY DUDLEY WRIGHT, F. R. C. S.,

London, England.

CONGENITAL stridor in infants is not a common condition, and as in the three following instances treatment with one drug seemed to be followed by a departure of the symptoms, it may serve a useful purpose if a note of the cases be given:

Case One.—Boy, aged four years, was brought to the London Homœopathic Hospital for marked stridor of the breathing, which appeared at nine months of age. There was a suspicious syphilitic history both in mother and child, the latter having had erythema of the buttocks and the other parts of the body in infancy. The present trouble came on rather gradually, reached its acme in about a month and remained stationary up to the present time.

The noise was always present, even when asleep, and it was so loud that people living two floors above could hear it distinctly.

The child had been treated at another hospital without benefit. Examination showed marked dyspnœa and noisy breathing, with depression of the ensiform cartilage and lower ribs with each inspiration. No abnormal area of dullness was present over the chest wall; there was some emphysema obscuring the heart's area to some extent. The trachea was slightly deviated to the right in the neck, and all the extraordinary muscles of respiration were brought into play, and the veins of the neck much distended. The glands on either side of the angle of the jaw were slightly enlarged. Examination of the larynx was not possible.

The abdomen was slightly enlarged, and the liver dullness extended high in an upward direction. No rise of temperature occurred whilst the child was under observation.

It was noticed that the breathing was decidedly more noisy during sleep, but this was not disturbed in any way by the dyspnœa.

Treatment consisted in the administration of *Mercurius biniodatus* 3x, grain i, three times daily, which was kept up for some weeks, when the child was lost sight of. Six months later, however, the child was readmitted to the hospital with symptoms of tuberculous meningitis, of which it died. When seen at this period the noisy breathing had entirely disappeared, but the child had a slightly "croupy" cough.

A post-mortem examination revealed the usual signs of tuberculous meningitis. The thymus was larger than normal, but did not appear

to press unduly upon the trachea. The larynx and trachea were removed, but examination failed to detect any gross lesion which would account for the noisy respiration.

Case Two.—The notes of this case are unfortunately very scanty, as I only saw the patient on one occasion for a short time some years ago, and subsequently learnt the result of treatment. The child was an infant, aged two months, who had suffered from noisy breathing since birth. There was a distinct history of maternal syphilis, and the child had snuffles, flattening of the bridge of the nose, and mucous tuberclas. *Biniodide of Mercury* was administered for some months, and at nine months of age the stertorous breathing had entirely disappeared.

Case Three.—A child, aged fourteen months, was brought to me for stertorous breathing, which had been present almost from birth. No distinct syphilitic history could be obtained; the child had had bronchitis, but no other illness. The noise, which might be compared to a loud snore, was present only during inspiration; the voice was normal in quality and quite powerful. Examination of the larynx was not possible. Auscultation showed that the noise was most audible over the thyroid cartilage. Examination of the chest gave a negative result. The patient was ordered *Biniodide of Mercury* 3x, gr. ii, three times daily. This was on January 20, 1890. On February 8th the child was brought to me again, being very much better, and on February 22d, his third visit, thirty-three days from the commencement of the treatment, the noise had completely disappeared and the breathing was natural.

So far as I have been able to ascertain there are not many references in laryngological literature to the condition under consideration.

Some years ago Dr. Robertson, of Newcastle on Tyne, published an article in the Journal of Laryngology on what he called "Posticus Paralysis of Infants," describing conditions exactly similar to those narrated above. He considered that the noisy breathing was due to paralysis of the crico-arytenoidens posticus, but he did not confirm this by an examination of the larynx. His treatment consisted mainly in the use of bromides, intubation of the larynx and removal of post-nasal adenoids when they were present, three cases of which he gave details improving under such treatment.

Other observers have attributed the trouble to enlarged glands pressing on the trachea, abductor spasm, enlarged thymus, or, lastly, a congenital malformation of the larynx aperture.

Thomson and Turner published a long article on the subject in the British Medical Journal (December 1, 1900), in which they relate various experiments made to elucidate the cause of the condition, and they come to the conclusion that the symptoms are due to an ill co-ordinated spasmodic action of the muscles of respiration; in fact, a choreiform respiratory spasm—analagous to stammering—as distinguish-

ed from a laryngeal spasm. They consider that this condition is due to some developmental backwardness of the cortical structures which control the muscles in question.

Whatever the pathology of the condition may be, we have evidence in the above three instances of the affection that the administration of the *Biniodide of Mercury* may be beneficial, and it is in the hope that this observation may prove of value to others that I bring forward these cases.

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SUBJECTIVE INSTRUMENTS VS. CYCLOPLEGICS.

BY E. W. BEEBE, M. D.,

Milwaukee.

THE use of cycloplegics in refraction work is a subject which has become threadbare from its frequent discussion, and it is probably no nearer a satisfactory solution than it was ten years since. The use, or non-use, of these drugs by the refractionist is believed to be determined largely by his educational environments. It cannot be expected, therefore, that all will view the subject through the same glasses, and it is probable that a large number of skilled refractionists will continue their use after what I have to say in opposition to them.

When asked by our worthy President to prepare a paper on the negative side of the subject, it was with some hesitancy that I undertook the task, from the fact that I was a strong advocate of their usefulness, in the refraction of young subjects, for a period of thirty years or more; later experiments, however, have fully convinced me that the use of drugs for this purpose is no longer necessary or desirable.

We live in a progressive age, and improved instruments are supplanting old devices in all branches of scientific work, and progress in refractive methods, it is believed, has kept pace with kindred sciences to such a degree that to be unable to successfully correct refractive errors without paralyzing the normal functions of the eye may be considered an indirect admission of lack of progress and unfitness for the practice of this important work.

It cannot be denied but that susceptible subjects have been severely affected by the use of such drugs, under certain conditions, and this fact, added to the discomfort, loss of time, and the annoyances due to being practically blinded during their physiological action, is sufficient to condemn their use, unless some other reason can be advanced therefor than that of facilitating the labors of an imcompetent refractionist.

The time was when it was considered essential for the refractionist

to ascertain the full amount of latent hyperopia, and as no means was at hand whereby this could be determined save by the trial case and wall charts the use of cycloplegics was justifiable, if ever; but this is no longer considered necessary, for if one is able to determine the fact that hyperopia is present he will in the majority of cases insure a greater degree of comfort for his patient by correcting only the manifest amount than if he attempt a full correction at the outset.

At present we have a large number of instruments at hand designed to determine this fact and to otherwise expedite the work of the refractionist, all of which are of more or less value, and some indispensable to rapid work.

The objective devices, of which so much was expected when first introduced, have signally failed to meet the requirements of a large portion of the profession, and it is to the subjective instruments these will be obliged to turn for a solution of the problem which confronts them when the use of cycloplegics shall no longer be accepted. If some of these devices have proved unsatisfactory, and that which is said of them be true, that they lack accuracy by failure to overcome the activity of the accommodation in some cases, the same problem confronts us in a much greater degree when the much-vaunted methods are used; in proof of which we have but to compare the results of an retinoscopic examination of a single individual, by several operators, independently of the others; and that which is true of this instrument is also equally applicable to the ophthalmometer.

It was my privilege not long since to be present at a gathering where nearly all the prominent instruments of this kind were on exhibition, each of which was operated by an expert, and to satisfy myself as to the reliability and usefulness of this instrument to the practical refractionist I requested each of them to kindly determine the amount and angle of my astigmatism, from which I am a sufferer to the extent of half a diopter; the result astonished me, after all that has been said concerning the accuracy of this device in determining deviations from the normal, as they did not agree as to the amount of astigmatic error present and did not correctly determine the angle of the same; one asserting that I had no astigmatic error at all.

Such inaccuracies I believe are common to all the objective devices in use, but are seldom noted when subjective instruments are employed, for practically the same results are obtained in each case, whoever the operator may be.

As there are no rules without exceptions, it is probable that no in-

strument has been invented that will determine the exact refractive error in all cases, but that some of the subjective devices are as accurate, much quicker to arrive at results, and in every way more satisfactory than tests obtained otherwise, I believe.

If I may be pardoned for making a personal reference, I will briefly state how it has been possible for the writer to prescribe satisfactory lenses in 3,500 consecutive cases without resorting in a single instance to the use of a cycloplegic or the use of an objective instrument. I am aware that 3,500 consecutive cases do not prove that there might not be many failures in the next hundred, and it is quite probable that some of my cases might have been more quickly disposed of had a cycloplegic been used, but, inasmuch as I make no claim to exceptional skill in refraction work, I believe the fact that I succeeded in satisfying my patients is reasonable proof that the use of cycloplegics are not essential to good refraction work.

On the presentation of a patient to be fitted with lenses, an ophthalmoscopic and oblique light examination is invariably made at the outset without spending time in unnecessary questioning of the patient, as the nature of his annoyances will be determined by the tests as the examination progresses. If no abnormal conditions of the mediæ are found, the Wilson Phorometer is used to determine the condition of the ocular muscles; an eight-inch white disc on a black background being used for this purpose, at a distance of twenty feet, and illuminated by incandescent lamps properly shaded. The pin-hole test for distant vision is then made, which serves as the standard of visual acuteness, when lenses are prescribed.

The patient is next tested with Culbertson's Prisoptometer, using the object disc before mentioned; this is an old-time instrument, but is considered by the writer as one of, if not the best test for astigmatic errors at our command; it is also fairly accurate in determining the lenses to be worn for distant vision, although for some refractive conditions I do not consider it altogether reliable.

A Refractometer is then brought into requisition, which is constructed after the plan of the Prisoptometer, having double prisms, rotatable on a common axis, in which respect it is not unlike that of the Ophthalmometer, the difference being that in this the patient, and not the physician, makes the observations; the readings in the one case being limited to a small portion of the cornea, while in the other all the refractive errors common to any case are obtained with facility and precision. All the important facts which the refractionist desires to know

are quickly worked out, without material effort on the part of the patient, and no one who is old enough to wear lenses is too young to be fitted by the use of the instrument; all that is required of the patient is to determine the fact whether two illuminated light discs, sixteen millimeters in diameter, and situated at fourteen inches from the eye, are tangent or not; a black line being seen between them if separated, and a white one if overlapped.

It does not require an expert to use it successfully, as the operator has but to rotate a lens disc before the sight aperture until the patient gives evidence that the edges of the light circles meet, when he has but to read from the dial the amount of the refractive error.

It is believed that instruments constructed upon this principle prevents, in the largest degree possible, the use of the accommodation when making visual tests; the light disc being observed through a black diaphragm, with no object for the eye to fix, prohibits, as far as may be, the use of the accommodation, as it is found to be practically impossible, by repeated trials, to change the readings on the dial by any act of the accommodation.

In the great majority of cases the full amount of hypermetropia is determined the same as when a cycloplegic is used, showing that the accommodation has but slight, if any effect, in preventing correct results from being obtained when making such tests. By reason of this it has a decided advantage over such instruments as the ophthalmometer, where the patient having an astigmatic error has it in his power to materially change the results of the test by slightly moving his fixating point while the tests are being made.

It is a saving of much time and vexation, as well as a satisfaction to the operator, to be able to determine the fact in a few moments whether a patient with a slight error of vision be hyperopic, myopic, or astigmatic, and to be able to prescribe correcting lenses without the half hour or more of tedious work, which is usually the case in patients having but slight refractive errors.

In patients with hyperopic astigmatism of marked degree, it is frequently a long and tedious process to obtain a combination of lenses which will insure visual accuracy, and comfort, by any other method known to the writer,—the use of cycloplegics not excepted,—but by the use of this instrument results will be obtained in a few moments which will require hours of valuable time to determine otherwise.

In presbyopic patients it is also very gratifying to be able to determine the exact lenses required for reading, quickly, and without

fatigue, and this I may say is seldom done without the aid of an instrument of precision, for, as simple as it appears, mistakes of this kind are of frequent occurrence.

When lenses have been selected by the use of the instruments above mentioned, the trial case is brought into requisition and a few moments given to the confirmation of the tests, after which the Ortho-Phorometer is relied on to determine the exact pupillary distances at which the lenses must be worn to insure comfort to the wearer.

I am not one who believes that all the good qualiteis of the subjective instruments are found in the one of my choice, as I know by experience that there are several in the market capable of giving good results when used as aids to the trial case. I am a believer, however, in the use of this class of instruments to the exclusion of all others, and it is very probable that a larger number would now be in use by the refractionists of this country had it not been for the craze over the objective tests which were introduced a few years since, and which have proved of so little practical value to the busy operator.

I am pleased to note that the tide is turning again toward the simpler and more accurate subjective methods, and the exclusion of cycloplegics.

DISCUSSION.

Ella G. Hunt, M. D.: The title of this paper, Subjective Instruments vs. Cycloplegics, would give a wide scope to its discussion, but in the paper proper Dr. Beebe's personal experience with a few instruments, and especially a refractometer of his own design, is given.

With this he has been able to prescribe for 3,500 cases with satisfaction to himself and patients. This is a fine record, but on general principles I object to discuss any instrument with which I am not familiar, or which I have not personally tested.

I am sorry Dr. Beebe has not his refractometer here this year, as I am sure we each would enjoy personally testing its merits.

We are on the lookout for any instruments that will add to the precision of our prescription work, not necessarily to the lessening of its labor.

The ophthalmoscope, various opthalmometers, phorometers, De Zeng retinoscope, etc., etc., are useful, but I think we still shall need that cycloplegic that will give us the utmost paralysis of ciliary muscle with greatest safety to our patient, and thus obliterate from our calculations the effects of the abnormally acting ciliary muscle which we encounter in spasm of accommodation.

The use of the cycloplegic, I do not think time wasted for patient or doctor, as so often that is about all the rest given to eye and brain

irritated by eye strain, and often our patients are not ready for any prolonged test until this needed rest has been supplied.

A spasm of accommodation, if present, I should think, would be augmented rather than decreased by effort of fixation of eye upon these bright illumined mires.

But we are ready to be convinced to contrary, and await with pleasure the prospect of testing this new refractometer which Dr. Beebe has promised us for next year.

THE DANGER OF CONSUMPTIVE HOUSES AND THE IMPORTANCE OF PROPERLY FUMIGATING.

BY J. HENRY HALLOCK, M. D.,

Saranac Lake, N. Y.

IN watching hundreds of cases of consumption, for the past six years, I am convinced that more than half of these could have been prevented with proper fumigation and care.

This, in the face of the number of thousands who die from this dreaded disease, is a broad statement, but only made after giving much thought and study to the subject in a place where I have every facility for so doing.

There is no guess work about tuberculosis being a contagious disease.

I have patients coming to me who were strong, heavy, powerful men, with no family history (and, by the way, we care little about family history as a cause of tuberculosis now-a-days), who never had a symptom until they moved into some new office or residence.

If the symptoms of contagion showed themselves in a few days, as it does in the different acute diseases, it would at once dawn upon the most thoughtless. But when a disease is from one to ten years making its appearance it is very easy for a physician who sees but few cases to entirely overlook the truth.

If these germs will attack and develop the disease in a strong, healthy man, how many more who are weak must fall victims to it?

The health boards of all cities throughout the world are taking active means to disinfect all houses occupied by consumptives; also, to properly instruct the patient so as to entirely remove the danger of those coming in contact with him. But there are many patients coming to me from the country and small towns where there are no boards of health, and it is the physicians attending those patients who need to bear in mind that they are dealing with, not only a contagious disease, but one whose germs possess great vitality.

"Do you think the disease is contagious?" I have been asked. Yes; I have seen cases where husbands and wives have taken it one from the other, children from parents, and parents from children.

There are not less than twenty-five trained nurses in our town today, healthy, strong girls formerly, who can give you the name of the patient or house in which they contracted tuberculosis; and to think that this could have been avoided had the patient and household been properly instructed.

But what I most wish to bring before you is the *danger* of a room in which a consumptive has lived, or an office where such a bookkeeper has done his work.

I will report two cases which will show plainly the need of fumigation:

Rose W., a healthy country girl, aged twenty. Father died at eighty-five; mother still living at seventy-five; two brothers, both healthy. She had always been healthy; was fat, strong, and a perfect picture of health. A rich aunt promised to give her a city residence if she would come and live with her in Jersey City, N. J. The room given to Rose was one in which a woman had died from tuberculosis six months previously. A little sulphur had been burned and the room redecorated. In eighteen months Rose died from milliary tuberculosis, the disease first showing itself ten or eleven months after occupying this room. Her symptoms were identical with those of the woman occupying the room before her.

I have under my care now a young man whose father, mother, and a cousin died from tuberculosis; all contracted from the same house. The father, a strong, healthy man, contracted the disease in an office in New York City. His wife, a very strong woman, died from the disease five or six years after he did. Two years after Mrs. A. died, a nephew who frequently visited at the house died from tuberculosis, and about this time the oldest son came to me in the early stages of the disease and since he left home a younger brother has developed suspicious symptoms. Here was a good family history, but a poorly fumigated house. All those contracting the disease have at various times occupied and slept in the room in which the father and mother had died.

I could report many more cases showing positively the need for careful fumigation, but these are sufficient.

Sulphur has but little effect upon the tubercle bacilli, and the only known method which has proven reliable is by the use of formaldehyde gas. When this is used in a thorough manner, with a machine of sufficient size to do the work in hand, it will destroy not only tubercular bacilli, but all other germs. It is now used by the boards of health and quarantine stations all over the world. Being a very volatile gas it penetrates every crack and crevice, and in experimenting with it they have found that it kills germs hidden away under several

folds of blankets, in bureau drawers, etc. This gas does not harm the finest metals or fabrics of any kind.

Tuberculosis is contagious only from the dried sputum becoming dust, blowing about and being inhaled. It is not the large lumps which a patient raises that are dangerous so much as the fine spray which flies from an uncovered mouth when coughing. These land, unseen, on carpets, on the draperies, on the wall, and in crevices, where they remain indefinitely, and there are many houses and offices which are as dangerous as pest houses. The present occupants may not contract the disease, but someone not so strong may occupy it later, who will be overwhelmed, and when the contact is sufficiently prolonged, with especially active germs, it may attack anyone.

With physicians who see but few cases each year, it is hard for them to associate contagion with a disease developing so long after exposure, and so the great danger is allowed to pass from year to year.

I have had people say that they would not like to stay in a place like Saranac Lake, fearing to contract the disease. But the danger is nothing like as great as some home or isolated hotel where they do not know the danger, or do not trouble to properly prepare the room afterwards; and there is no one to instruct patients during their stay.

Here a patient is at once instructed to cover the mouth when coughing, and to expectorate only in sanitary cups, and to be careful about contaminating their fingers, linen, etc. Cottages are all built with plenty of large windows, without blinds. These are kept open nearly all the time, day and night, letting in lots of sunshine and fresh air. The room is always carefully fumigated with formaldehyde gas as soon as a patient leaves, and if they stay long enough their room is fumigated, as well as the whole house, several times a year.

People are cautioned about expectorating about yards, on the walks, or anywhere else, except in receptacles provided for the purpose.

These regulations are enforced by an efficient Board of Health, and all cottages and hotels taking boarders are compelled to keep them in a sanitary condition.

DISCUSSION.

Geo. B. Peck, M. D.: Accustomed though we all are to startling surprises of our profession, I was amazed to receive a request to discuss a paper before this body of specialists. A general practitioner is supposed to know a little of everything, and not much of anything, unless it be Materia Medica, which is indeed, or at least should be, his specialty. Hence the impropriety of my appearance here. However, I am fortunate in the acquaintance of the Secretary of the State Board

of Health of Rhode Island, Gardner T. Swartz, M. D., to whom I am indebted for everything of value I may say. Through his influence our's was the first State to follow the example of New York City in tendering to physicians a free examination of sputum in all cases of suspected tuberculosis. Extended and protracted observations, therefore, not less than untiring research, impart to his opinions, in this matter at least, the weight of authority.

Confessedly tuberculosis is a *communicable* disease, diffusible through contagion or through infection, or through both (see Foster's Medical Dictionary). While more readily and more commonly received upon irritable mucous surfaces of the air passages through pulverized dried sputum, it *may* be transmitted when the same is moist through kissing, coughing, mouthing the nipple of a nursing bottle, smoking an infected pipe, or drinking from infected utensils, if the throat and air passages chance to be in a receptive condition. Gases that emerge from the nose or the mouth during ordinary respiration contain no organisms; only when they are suddenly, forcibly expelled is destruction and death promiscuously scattered. Luckily the causative bacilli possesses not indefinite activity; extreme dryness, heat and exposure to bright sunlight destroy them. So also do various chemicals, provided they be brought into direct contact therewith. Combustion of sulphur is adequate *if* the masses of sputum to be disinfected contains sufficient moisture to absorb the resulting fumes and convert them into acid; elsewhere the element is worse than wasted, for a false sense of security is engendered, while but a modicum, perchance none, of the bacilli have been scotched. Its well-known damaging effect upon fabrics of almost every nature should materially assist in dissipating all thought of this substance as a serviceable germicide. The action of formaldehyde gas is restricted to micro-organisms resting on exposed surfaces. It *will not penetrate* to, and therefore *cannot destroy them* when concealed in pockets infected by contaminated nose rags (handkerchiefs), nor between thick layers of blankets, within drawers or other concealed places. Its effect depends on its *rapid* development in a *cold* and confined atmosphere. All material used in the construction and equipment of a Pullman sleeper has been thoroughly exposed to its operation without injury. In the judgment of all State boards of health, the most effective disinfection is secured by the free application of a one-one-thousandth solution of mercuric chloride following a general house cleaning with soap and water, preceded in its turn by a dense interjacence of formaldehyde gas. For the answer of all practical questions concerning sanitary proceedings now in repute consult Municipal Sanitation in the United States, by Charles Value Chapin, M. D., Superintendent of Health in Providence, R. I.

Since 1894 Dr. Swartz has maintained a card catalogue of the results of all examinations for tubercle bacilli, and a record of all deaths from tuberculosis in the State since 1890. The latter is in duplicate, being arranged both by name and by residence. Its perusal shows on

the one hand numerous instances of different members of a family succumbing to this disease at intervals of months, or of a few years, at the same or at different abodes, and on the other certain houses that witness death in many families of different names from this identical cause. Usually these dwellings are located in the poorer sections and are occupied by families that are in a depressed condition, prone therefore to infection; still, its constant repetition at the same address leads one to believe that the house, or the apartments, have been polluted by a previous dweller. The Health Department of Providence, therefore, is always willing and ready to disinfect upon request any apartment that has been occupied by a person deceased from tuberculosis pulmonalis. Its wisdom becomes evident when we remember that the power of the system to resist *any* communicable disorder is diminished by alcoholism, unsanitary trades, influenza, malaria and kindred conditions; that an ultimate occasioner, innocent or otherwise, is likely to be found in any family, and that the cost of this disease to an individual, to his friends and to the community far exceeds that of any other.

Persons residing at sanatoria, like those at Rutland, Mass., and Saranac Lake, N. Y., are less liable to become victims to tuberculosis than the denizens of any populous city in the United States. The danger of infection in these, subject as they are to the strict discipline of the Trudeau system of treatment, is less than in the town cottages, where patients are under little or no restraint, and where they are not liable to dismissal if caught carelessly or discriminately expectorating (see article on the examination of the hands of patients within and without the sanatorium at Saranac Lake, by Trudeau). The necessity for despotic control of these people is well illustrated by the following incident: The wife of a lighthouse keeper, isolated from civilization on Prudence Island, Narragansett Bay, became ill from tuberculosis pulmonalis through some unknown means. Her parents had never suffered from the germ in any manner. Dr. Swartz inspected the premises, and carefully instructed the entire family concerning the precautions to be observed. Despite repeated emphatic warnings, she and her children persisted through assumed caution to use the family hearthstone as a common cuspidore, until herself, a son, a daughter and a second son had succumbed to the dire malady.

Dr. Hallock's paper contains ample material for prolonged consideration.

EYE REFLEXES.

BY BUSHROD W. JAMES, M. D., LL. D.,

Philadelphia, Pa.

HAVING under my care a case recently in which a severe recurring proctalgia was associated with an intense pain at each paroxysm in the globus of the right eye, and extending through the orbital region to the right temporal region and then into the head, I was induced to investigate this subject more thoroughly, and, having done so, I furnish you this brief paper on reflexes for consideration and debate.

Norris and Oliver refer to an interesting condition, in which he says:

In considering the subject of these distant eye symptoms in the case mentioned, I found no association with the functions of other organs, and apparently there was no pathological change in the eye itself. Evidently the nerves of the eye received a stimulus at the same moment that the nerve stimulus was received in the nerve terminals in the distant locality above referred to. Now to get at the real significance of this special reflex action of the nervous system, we must state certain facts connected with the sympathetic. Bearing in mind then the following points, we will be able to throw more light upon these complex reflex cases that occasionally come across our pathway in the practice of ophthalmology. In reflexes no system, or organ, takes on or performs the special function of the one pathologically involved; therefore there is no pathological change produced in or by the reflex.

The impulse that begins the symptoms known as a reflex always sends its stimulus directly over the same nerve fibres. The receiving spinal centres and the returning impulse are each of their own character, so that no organ substitutes the function of another.

The reflex action is always direct and not vicarious. The reflex action consists of an impression made upon some sensory nerve; this is conveyed to the corresponding centre in the gray matter of the posterior column of the spinal cord, thence to the anterior columns, and then they return to the origin of the stimulation. Wherever the symptoms originate, and wherever the nerve centre may be, either in the

spinal cord, medulla oblongata, or cerebrum, it is identical. It may be much more intense, and in this way a greater motor set of symptoms result; only, the action is more widely distributed. In that way a greater number of muscles may be involved, and thus a greater manifestation of nervous reflex action is noticeable.

The spinal cord can conduct not only voluntary, but also reflex impulses without direct application to the cord itself.

Schiff holds the view that pain is originated in the sensory root fibre of the posterior root itself, which traverse these posterior columns, but that the proper paths of these columns do not do so. He found that dilatation of the pupil occurred at every stimulation, while there was loss of tactile sensation when the posterior column was removed; yet the sensation of pain remains. The nerves of these columns are not excitable so long as the stimuli are given to these columns. The reflex movements are caused when the ends of the nerve roots are stimulated, or when the nerve current extends to the posterior columns from a distant point. Some physiologists, however, contend that the spinal cord can be excited by direct stimulus.

Landois and Sterling state that the vaso-motor constrictor nerves, which come from the vaso-motor centre extending down through the lateral columns, and along their entire course, can be excited by proper stimuli, and stimulation of any transverse section of the cord causes a construction of all the blood-vessels below; and, further, that the ascending fibres are likewise excitable and the vaso-motor centre takes on an increased activity. Stimulation, however, to these pressor fibres reflexly influences the vaso-motor centre but does not cause sensation.

Dr. E. R. Eggleston defines a nerve centre which localizes the nerve stimulus, as stated by Bramwell, to be a point from which voluntary motor, reflex motor, vaso-motor and trophic motor impulses are distributed; and to which peripheral impressions which induce reflex movements and sensations proceed from a limited area of the body.

Secondly, that a conducting medium through which the great tracts, motor, sensory, controlling, etc., pass place the brain in connection with all the other segments situated below it.

He says, "That a centre is therefore composite. Through a like channel the response to given sensory stimulation may be either motion, voluntary or reflex; vaso-motor, constrictor, dilator, inhibitory; or trophic." Thus voluntary, and involuntary motion, sensation, conditions of circulation and nutritition are all open to modification by simple reflex nervous action.

He adopts the classification into four distinct reflex systems: the cerebro-spinal, sympathetic, automatic and vaso-motor.

The first of these being an independent one, may be considered as the true reflex system being governed by the voluntary muscular system; and the gray matter of the brain and spinal cord being the seat of this reflex system. Other reflex systems are connected with it and are controlled thereby. The sympathetic reflex system is located in the ganglia, extending along the entire spinal cord inside of the body; these being connected by bands and the ganglia being likewise connected with the cord, maintain an action over the functions of the intestinal tract, and the nutrition which is obtained for the body from that source.

The automatic reflexes have control over such organs as the heart, intestines, bladder, etc., and are influenced through their respective nerve plexuses.

The fourth system having distributed locations in the brain and spinal cord control the blood-vessels causing constriction or dilatation in the vaso-motor vessels, and the inhibitory apparatus. The self-acting systems, which control the special organs which we have referred to, we cannot consider in this paper. There is only one point which might be referred to, and that is that the nerve currents are often obstructed, and this may occur, not only in the original paths of the reflex circuit, but anywhere along the track of the reflex arc, to which we referred in the early part of this paper. In this way the transmission of nerve force may become interfered with, as the nerve influence is always manifested at the location where there is the least obstruction. The impulses may easily be deflected along the line of other connecting nerves not accustomed to such transmission, thus giving rise to erroneous responses, both as to character, quantity and quality. Therefore, if the line of transmission is abnormal, we obtain a diseased condition of the reflex, or, in other words, a set of strange reflex symptoms at a distance from the pathological change.

Without entering into the broad subject of the vaso-motor impulses and responses, and the stimulation or the inhibition of the other organs that are largely supplied with sensory nerves, with extremely sensitive peripheral termini, and accepting the general view that reflexes follow like channels, and that they follow the arc form of transmission, we will dismiss the irritation produced in the intestines, rectum, uterus or bladder and their reflex symptoms as not coming within the range of this paper.

A fact that there has been discovered cords leading directly from the origin of excitation to reflex centres independent of the automatic lines of transmission helps us to explain some of the symptoms which we have formerly considered as strictly reflex. Possibly while the nerves in the regions to which we have just referred, as well as to the heart, stomach, and organs of generation, are sympathetically acted upon, we must not forget how completely the ganglia limit the reflex symptoms on the principle of control. Now in regard to the eye, wherever you find such symptoms as pupillary dilatation or contraction as the result of an injury to some portion of the brain, or as a general traumatic shock, the symptom points to serious injury quite at a distance from the optic organ itself, and the case requires your careful study and watchfulness. The symptom known as nystagmus is a peculiar one, and is often the result of local nerve pressure, or irritation, or if venilateral probably some injury to the other eye. Likewise the disturbed condition of the ciliary nerves in cases of astigmia, or even in corneal inflammation or ulceration, or the reflex symptoms of occipital, temporal or orbital neuralgia, and of nausea and vomiting as the result of a strain upon ciliary muscles or nerves in aiming to accomplish proper accommodation and overcome the astigmatic effect, and also a condition which may exist in the cornea and transparent media of the eye itself, are somewhat perplexing in their character, and not as easily explained as we would desire.

If we recall the manner in which the nerve fibres are distributed to the globes of the eye by way of the optic nerves and the optic commissure, we can trace some of the symptoms of the eye involved to the exact source of irritation, and it is our duty to do so, no matter how long the examination and how difficult the tests may be to work out the origin of the peculiar symptoms arising from the diseased eye or nerve. This decussation of the optic nerve fibres gives us a limitation of field of vision when there is no observable serious pathological change in the nerve itself or the tract of these nerve fibres.

The third, or motor-oculi nerve, which sends its filaments to the recti and oblique muscles is either directly or by reflex action interested largely in the production of the hyperphorias, exophorias and esophorias which we meet with every day. The condition may arise whether these are in direct action or in reflex; but, as I pointed out in the early part of the paper, a reflex sensation is governed by direct nerve fibres; although these nerve fibres may not necessarily be identical they must be

the nerve fibres which are distributed directly to each of the ocular muscles.

Then, again, the choreic movements which are so common in children that are of a nervous temperament, and which usually come from overtaxing, or by severe study, are more strictly reflex nervous symptoms. Nystagmus is also a condition which may be said to originate indirectly from any direct stimulus in the eye muscles, independently, or by a reflex action from some diseased condition in the nerve-ganglia, or in the general nervous system. The pathetic nerve, usually known as the fourth nerve, oftentimes takes an active part also in these muscular actions. It is but a small nerve supplying the superior oblique muscle, and has its origin in front of the pons. Varolei, on the outer side of the crus cerebri, but the fibres run back even behind the corpora quadrigemina to the valve of Vieussens, where a decussation is formed on the upper surface by a band of fibres. Deep origin of this nerve is also traceable below that of the third nerve at the floor of the aqueduct of Sylvius. It crosses the third nerve, and it has some filaments connected with the sympathetic cavernous plexus. Frequently it is associated with an ophthalmic division of the fifth, and a branch is found to be given off to partially form the lachrymal nerve. There is also a recurrent branch, which is traceable backwards, even to the lateral sinus.

This intimate relation of the nerves going to the eye show us how easily the symptoms which we call reflex give us great annoyance in the determination of the seat of local disease in the eye itself or in its appendages.

But what as to the management of these peculiar cases we are constantly meeting with? Can these diseased conditions which are so frequently observed in the choreic manifestations and movements, and in all the foreign reflex indications that present themselves, be cured by medicinal treatment? Will the special treatment and correction of the refraction always give us the relief which we anticipate in many of these cases? I apprehend not. However, every oculist has cases of intense neuralgic pain, which have been going on for years, which he almost positively assures himself can be entirely relieved by the selection of proper formula for lenses. He thinks he can control the reflexes, too, but how sadly he is mistaken in many of these cases; and the treatment to be resorted to to help him out of his difficulty has to be medicinal.

With regard to the point of sympathetic inflammatory symptoms oc-

curring in the opposite eye to the one afflicted, such as conjunctivitis, corneal ulcer, cataract, and even other conditions, have been generally conceded as entirely sympathetic, or reflex, yet Dr. Henry R. Swanzy holds that there are no such sympathetic affections, and says that severe attacks of optic uveitis (iridocyclitis, or iridochoroditis) are the only conditions to which the term of sympathetic can be applied. And he claims that such cannot result unless there be a traumatic uveitis in the other eye. We must admit, however, that any traumatic case where a ciliary body is injured, or has become subsequently affected, that a sympathetic set of symptoms does result in the opposite eye; beginning often as an iridocyclitis, but usually as an optic neuritis. This is traceable in almost all of these cases, but the symptoms coming on slowly do not excite the patient's attention at a sufficiently early stage of the conditions to save the sympathizing eye in many cases. The disease in the sympathizing eye often is not covered by the amount of irritation in the eye originally affected. The period of these sympathetic symptoms may be from a month to eight weeks; usually, however, cases are observed as early as two weeks, while others again will not appear to any great extent for many years.

Dr. Swanzy says that sympathetic irritation must not be confused with sympathetic ophthalmitis. Frequently no local alterations are seen in the apparently healthy eye, and this is a true reflex, a strictly neurotic condition; the removal of the exciting eye will generally relieve and save the good eye if done in ample time.

Rutherford and Hallsten, who discovered the fact that the reflex contraction produced by stimulating the sensory nerve was more intense the nearer the place of stimulation was to the sensory nervous system, is an important fact for the observer. The unequal excitement will cause different degrees of results. For instance, the stimulation required to be more to produce much excitation of reflex symptoms is greater than if applied nearer the nerve centre, as manifested by the acuteness of the pain, or severity of the muscular contractions.

As homœopathic prescribers, we want practical results to follow our management of these cases. Let us then refer to the nearest corresponding remedies having eye reflex symptoms. Upon our principle of selecting curative agents, we naturally like to find the remedy covering the greatest number of symptoms. In many cases of this disturbed condition of the muscles in the neighborhood of a diseased eye, we will find that they are more comprehensively covered by such a remedy as *Belladonna* rather than any other remedy that is known to

the medical profession for disturbed conditions of the muscles, which we have in most of these cases. The muscular jerking, throwing of the head into the pillow, dilatation of the pupils, the congested conditions of the conjunctiva and general congestion of the face and head, and oftentimes hysterical indications, such as laughing, crying and dancing about, and general excitement of the general nervous system, are its main features. *Hyoscyamus* has always this jerking and disturbance of special muscles, and often a violent jerking of the head, talkativeness, laughing, as in hysteria, yet there is no mania present.

Crocus will correspond more to the choreic indications, such as laughing, dancing, jumping about and muscular contraction, loss of muscular control. Sudden anger and repentance, laughing and talking in alternation are its characteristics. Then comes *Actea racemosa,* with its jerking, which affects muscles on the side on which the patient is lying. Shuddering and nervous chills are its characteristics. There is such a degree of nervousness that the patient expresses it in a manner, as if the top of his head would fly off, great apprehensiveness; he sees strange objects. Possibly the most prominent remedy in these reflex symptoms, such as occur in teething children, such as spasms, that frequently follow it, as well as the irritation, from taking into the stomach, or bowels, food that is not readily digested, is *Chamomilla.*

Causticum has many motions, troubled sleep, jerking and uneasiness, turning one's head involuntarily from one side to another.

Zinc has many of these reflex nervous movements; so has *Asofœtida, Arsenic, Mephitis, Sticta pulmonalis, Asarum,* which has a very peculiar symptom, which affects the peripheric nerves that the mere scratching of silk produces loss of control over the entire nervous system.

Moschus, Agaricus, Stramonium and *Magnesia* all likewise have more or less of these reflex symptoms.

THE PREVENTIVE TREATMENT OF COLDS.

BY O. L. SMITH, M. D.,

Chicago.

AS a consideration of the preventive treatment of so-called colds comprehends no discussion of abortive measures, the substitution of the word prophylactic would seem to materially lessen the very general confusion of the two terms.

Since it has been proven that colds are *attended,* to say the least, by streptococci, staphylococci, micrococcus class and influenza bacilli, and that these germs may be projected from ten to forty feet by the acts of talking, coughing, laughing and sneezing, the subject matter entailed naturally divides itself into the prophylactic treatment of infective and non-infective colds.

Whether these cocci are the genesis, or progeny, does not concern this paper, for in either instance the isolation of such a patient is of the greatest prophylactic importance to those with whom he naturally would come in contact. After this, normal nasal functionation offers the greatest immunity, in which direction our first and best efforts should always be directed.

Nasal and pharyngeal lavage should immediately follow a known exposure, and, indeed, among urban patrons, frequently exposed, the daily employment of the douche or spray, preferably at night, often proves the "ounce of prevention." Specialists often save themselves immediate and mediate infections by wearing a respirator while treating such patients.

A greater guarantee than all the artificial prophylactics, however, is a generously nourished, sufficiently exercised, and well-groomed body.

While non-infective colds seem to primarily depend upon a local or general lowering of bodily heat, investigation usually discloses nasal or general predisponents. That specialist or man of general medicine is wise, who, failing to find specific explanation for an individual's chronic colds, refers him to the other for examination and treatment.

Among children attention to the almost omnipresent adenoid condition is often sufficient to prevent recurring colds. Contrary to textbooks, we not infrequently find nasal spines whose size demand opera-

tion, and the cessation of the colds thereafter certainly justifies the procedure.

We must confess our skepticism as to the existence of *primary* hypertrophic rhinitis in children, although often occurring secondarily from renal or cardiac derangements, and requiring local treatment, even after correction of the underlying cause.

We see another class of children whose chronic colds disappear with the correction of the uric acid state, a condition whose existence among youngsters is but rarely suspected and whose importance is as rarely considered.

With the exclusion of local causes must come the general examination, and you will often be pleased to see children's colds disappear after operating upon a hooded clitoris, an adherent prepuce, or fissured anus.

Any one of the many derangements of childhood, accompanied by perspiration, are fruitful sources of colds and must be bargained with ere we succeed.

Among adults we have all seen chronic colds disappear after the reduction of a middle or lower turbinate, removal of spine or polypus or refraction of the septum. A very fruitful, but unrecognized source of "colds" is a sub-acute or chronic inflammation of the frontal or ethmoid sinus, which under exposure or physical or mental depression simulates an acute cold.

All too frequently, the nasal and pharyngeal tissues are the site of oxaluric or lithæmic outbreaks that are regarded and mistreated as acute colds with indifferent success, of course.

As we have remarked before, when the nose and throat examination is negative the patient should be referred to a good man of general medicine who recognizes that attacks of recurring colds disappear with the correction of renal insufficiency, gastric hyper-acidity, intestinal inaction, hepatic torpor, anæmia, chlorosis, overwork, worry or sexual over-indulgence.

Occupation colds, such as you find among workers using pyrogallic or oxalic acid, chlorin, ammonia and the like, or among bakers, millers, threshers, stone-cutters and spice grinders, are most effectively prevented by a change of occupation, though some amelioration can be obtained through plenty of fresh air, forced draft, artificial humidity and respirators.

To cure another class of colds it will be necessary to remove inland, moderate the temperature of the super-heated apartment, forego

steam heat, properly drain the basement, repair the leaking gas pipe or eliminate the sewer gas.

The prescription of the "gum rubber" for many and good reasons will cure many colds, especially if replaced by heavy cork-soled shoes, and in inclement weather, the fleece-lined or so-called "Boston Storm Rubbers."

The liberal use of drinking water is an adjuvant of no mean degree, and may be insisted upon with benefit in the majority of cases.

Whatever the underlying cause, the muffler and chest protector should be cast aside. Many patients contract colds because of the insufficient protection afforded by linen underwear, while others are similarly affected by the moisture induced by the wearing of heavy flannels. Although each individual must be separately studied and prescribed, for our best general results have followed the use of "part cotton, part wool" undergarments of medium weight, meeting the climatic vagaries with the different weights of external clothing. However, any clothing is scant protection to the patient who does not properly exercise or bathe, which former is almost as difficult to exact of city patients as it is necessary to obtain anything like satisfactory results.

Our most important adjuvantal results have been obtained through the rigorous use of the daily sponge with salt water. Direct the patient to prepare a heavy brine solution in a wooden bucket for a week's use without renewal. Dry out; after immersing in this solution a turkish bath towel, which is to be used, not only for the purpose of drying the patient after the sponge bath, but for brisk, vigorous friction as well. At first the water may be tepid; but gradually the temperature should be lowered until the water is cold, provided always that the patient reacts nicely.

Each case offers an individual equation that only elucidation of the predisposing and active causes and close clinical affiliation can satisfy, and the self-styled specialists who can but generalize must be content to fail.

INDICATIONS AND CONTRAINDICATIONS FOR THE USE OF THE MYDRIATIC.

BY EDWARD HILL BALDWIN, M. D., O. ET A. CHIR.,

Newark, N. J.

THOSE of us who were at Richfield Springs last year will remember the lively and interesting discussion concerning the use of the mydriatic in refraction cases. But while there were many valuable and instructive points brought out in that discussion, there was almost nothing said about positive indications, for and against the use, of this much-abused and yet invaluable aid in our professional work. Doubtless no oculist present will say that he *never uses* the mydriatic. Doubtless no oculist present will admit that he *always* uses it. Either method would be bad practice, the one careless and the other dangerous. So, after all, the question narrows down to our reasons in *each individual case,* why we should, or should not, paralyze the accommodation.

At times the decision is a very delicate question, and in many cases men of equal ability and judgment will differ. This paper is presented in the hope that it will develop a good discussion upon the indications and contraindications of the agent under discussion. The subject is comparatively limited, but of the greatest practical importance. My own observation has led me to consider the conditions about to be named as strongly indicating the use of the mydriatic; although not positively demanding it on account of possible contraindications.

(1). In all cases of accommodative spasm, so persistent that we cannot be even reasonably sure of the refraction, I can see no possible way out of the difficulty except to paralyze the ciliary muscle. If blepharospasm is also present it is invariably a sure indication for particularly thorough use of the agent, and in such a case *Atropine* is the most reliable.

(2). In cases of less intense spasm than just described, but of sufficient ciliary irritability to prevent a positive choice of the *axis* in astigmatism, I have come to regard the *correct axis* a vital, positive essential to sound refraction work. A slight variation in the strength of a cylinder may often be tolerated, but an incorrect axis *never.*

(3). Patients testing as though slightly myopic. These cases are to be looked upon with strong suspicion, even if no subjective symptoms can be dug out of them. Such a case is often pseudo-myopic, and with such a test I always use the mydriatic, unless contraindicated. A single drop of *Scopolamine* $^1/_{200}$, *Hyoscine* $^1/_{100}$, or *Homatropine* $^1/_{100}$ is enough to establish the diagnosis.

(4). Cases of genuine myopia. Barring strong contraindications the mydriatic should be employed. Without it we are in danger of prescribing lenses too strong for the future good of the eye. If the ophthalmoscope shows the myopia to be, or to have been, progressive, the non-use of the mydriatic is, in my judgment, little short of malpractice.

(5). Cases of heterophoria, which need attention on this account per se, especially if the heterophoria be partially latent. The refraction undeniably influences the muscular balance, and we will often fall into error if the refraction is not determined with accuracy.

(6). In all cases of strabismus.

(7). Patients wearing unsatisfactory glasses prescribed by some other oculist, especially if a mydriatic was not used. I have many times followed another physician's refraction with a mydriatic, and found an error of axis, or amount, which error was wholly latent at the first test. The chance for error is always present, and it is assuming dangerous responsibility to take "the other fellow's" findings as correct. Even a great reputation is not incompatible with mistakes in refraction work.

(8). In cases where my own previous prescription, without the mydriatic, is unsatisfactory. Sometimes we pass cases that really should have been paralyzed, and find out our mistake later, when we get the ciliary muscle under control. Unless strongly contraindicated, I always use *Atropine* in patients whose glasses are not helping as they should, the mydriatic not having been previously used.

(9). In searching for reflexes. Given a case of persistent headache, hysteria, chorea, neurasthenia, etc., in which a possible ocular reflex may be causing trouble, I would always paralyze the accommodation, barring serious contraindication.

(10). In cases showing more manifest error than the total error previously found by mydriatic. I have a few times seen such cases. Three years ago a patient showed under thorough use of *Atropine* $+4.\subset .75$ ax. 180°. Six months later without mydriatic $+4.\subset 1.50$ ax. 180°. One year later $+4.50\subset 2$ ax. 180°. Mydriatic again used produced $+4.50\subset 3.$ ax. 180°. Here was a case showing successively

.75, 1.50, 2; and, finally, 3. D. of astigmatism. The spasm was so intense and fixed that even *Atropine,* used for four days, only developed one-quarter of the astigmatism at its first use—and the constant wearing of the lenses finally coaxed the ciliary muscle to give up the unnecessary efforts at focussing.

The above-named conditions about cover the more important indications for paralyzing the accommodation. But there are important contraindications, which we must not only recognize, but which we must search out and exclude before we can safely prescribe the chosen mydriatic. Such powerful drugs as *Atropine, Scopolamine* and *Hyoscyamine* ought never to be used, without making sure, in so far as we possibly can, that no harm will result. The commonest conditions which should make us cautious in the employment of these agents are:

1. Plus tension.
2. Previous glaucoma.
3. Previous severe systemic poisoning from any mydriatic.
4. Pregnancy.
5. A nursing mother—on account of the possible danger to the baby.
6. Family sensitiveness to mydriatics. As a rule, a contraindication will outweigh in importance the ordinary indication.

DISCUSSION.

W. W. Blair, M. D.: The employment of mydriatics in the determination of errors of refraction is a question which we seem to have always with us.

I really feel that I had my say last year at Richfield Springs, and do not believe that I can discuss Dr. Baldwin's paper to the best advantage, because I am so heartily in sympathy with the views he expresses.

Probably most refraction cases applying to the *oculist* do so in the effort to obtain relief from asthenopia in some of its forms, or on account of some reflex distress supposed to have its origin in the eyes.

Now, the underlying cause of most asthenopia is established through the more or less unconscious effort on the part of the individual to maintain a proper relation between accommodation and convergence in securing binocular single vision.

In hypermetropia, the accommodation required is in excess of the relative amount of convergence; in myopia, the condition is reversed; thus we see that a disturbing element is brought in, the effects of which may be local, or reflex, or *both.*

The abnormal relation just described becomes in time a habit, so that where it has become confirmed we find the patient quite unconscious

of the effort he is making, or at least unable to desist therefrom of his own volition; hence, we continually see patients whose static refraction calls for a convex correction, rejecting any and all lenses, or perhaps even accepting a weak concave lens.

Now, under the above-named conditions it seems to me that without the employment of a reliable mydriatic we work in the dark,—and to obtain an accurate estimate of the refractive state is impossible. I grant that by the careful use of the objective and subjective tests we can satisfy ourselves that there is in a given case hyperopia, or myopia, with its attendant discordance in the relations above described, but to attempt to measure this while the patient is able to willfully or unconsciously mislead you by alternately contracting and relaxing his ciliary muscle—is futile.

Of course, I am aware that many *patients* are content, wearing an approximate correction, but *I* am not satisfied with an approximate knowledge, and I know of no way to make this knowledge absolute beside temporarily abolishing the accommodative effort.

Further than all this, we have to keep in mind that in the mydriatic we have also a remedial agent, whose aid we should not despise.

How many times have we not seen even in a moderate hypermetropia the hyperæmic disc-choroid and retina, the fluffy fundus—the degenerative changes at the macula, all of which yield to the more or less prolonged use of the mydriatic along with dark glasses, rest and general measures. And this leads me to say that there is one point I would like to bring our more fully, and that is the matter of indications as against contraindications:

Dr. Baldwin has classified these very clearly and concisely, and has, as I would do, laid more stress upon the indications than the contraindications, inasmuch as I conceive the former to far outweigh the latter in frequency. To illustrate, in taking the general run of refraction work we shall find the bulk of it to be presented in individuals under forty years of age—and here I would go so far as to say that in the absence of any contraindication I would *ordinarily* use a mydriatic, as I should feel that it was usually *necessary* in order to obtain an accurate measurement in a person under the age named.

Another point was touched upon which gives food for reflection, and that is in the matter of cases of refractive error coming to us wearing, *without relief,* the correction prescribed by another oculist.

I, with Dr. Baldwin, am very prone to resort to the use of very thorough mydriasis in such instances, and then, I reflect, should I be any *less* painstaking in going over a case at first hand? I think not.

With regard to the choice of the mydriatic, I am perhaps a little old-fashioned, as the newer styled hurry-up methods have not been thoroughly satisfactory to me. So that, generally speaking, in patients under forty years of age my preference is to use *Atropine sulphate,* where the time at the patient's disposal will permit; if not, I have to be content with one of the less deeply-acting drugs.

SOME OBSERVATIONS IN THE TREATMENT OF CORNEAL ULCERATION IN GONORRHŒAL OPHTHALMIA.*

BY JAS. A. CAMPBELL, M. D.,

St. Louis.

THAT gonorrhœal ophthalmia is one of the most serious and disastrous of all of the inflammatory diseases of the eye is generally conceded. Reliable authority asserts that about 50 per cent. of eyes thus afflicted are lost, and farther state that when the cornea is involved, in violent cases, the eye is seldom saved.

Since this is true, then any experience, which is followed by a more favorable result, should be worthy of record. For this reason I wish to relate two cases coming under my care during the past year, where every condition threatening loss of the eye was present, but which were saved by the treatment adopted:

Case One.—Mr. G. T., age twenty-six, came to me stating that two days before the right eye became red and irritable, itched and began to pain. The eye grew rapidly worse, and by the next morning the secretions had changed from a watery, sticky fluid to a copious, purulent discharge, accompanied by much pain.

Examination showed the right eye overflowing with a bloody pus, the eyelids much swollen, the palpebral and ocular conjunctiva œdematous and chemosed, standing out over the corneal margins, leaving the cornea itself like the bottom of a pit; but up to this time the cornea was transparent.

The serious nature of the disease was explained to the patient, and although closely questioned he positively denied any gonorrhœal or other similar disease; and my personal acquaintance and knowledge of the man led me, without hesitation, to accept his statement as true, although fully aware of the fallacious dallying with truth, so usual under such circumstances. Farther investigation showed that he was one of a numerous office force who used a roller towel in common, and this was quite enough to explain the possible cause of the infection and give him the benefit of the doubt.

As the disease had reached the second stage, I immediately commenced the use of protargol, eight per cent. solution, every four hours,

*Dr. Campbell's paper should have appeared in last year's Transactions, but original paper was lost.

and formalin 1 to 500 three times daily, with a saturated solution of boric acid every half hour for cleansing purposes.

I saw the patient three times each day, and a nurse carried out my instructions regularly day and night.

On the second day the purulent secretions were very abundant, and the chemosed ocular conjunctiva, at the upper outer part, hung over the corneal edge like a pad, and the upper outer corneal segment under it began to show a superficial haziness.

The treatment was pushed with rapid regularity, but the pus, though less, continued copious and excoriating. On the third day it was plainly evident that the cornea was involved, deeper and deeper, and ulceration was a certainty, with the probable usual prolapse of the iris, and perhaps loss of the eye.

Fully realizing the serious import of the situation, and knowing that at this stage of the disease local treatment was generally of little avail, I recalled that a short time before I had read of some interesting statements as to the value of Nosophen in corneal ulcerations. So continuing the first treatment used, with the addition of usual *Atropine sulph.* (gr. iv to ʒi), I dusted on the ulcer region finely powdered Nosophen, sufficient in quantity to cover the cornea, and then loosely bandaged the eye for an hour. The eye was then thoroughly cleaned, and after another hour more Nosophen was dusted in.

The change for the better was rapidly apparent. The inflammation began to recede. The ulcer spot, which was on the verge of perforation, ceased to increase and showed improvement. This continued, and within a week my growing confidence justified my hopes. Anxiety gave way to positive pleasure; and the case went on better and better, day by day, until it ended in perfect recovery. The cornea is transparent, but at the ulceration point there still remains a transparent depression in the healthy restored cornea, with V $^{15}/_{15}$.

Case Two.—January 1, 1900, I was called to see a little girl, ten years old, in one of our best families. Three days before that her right eye became very red, watery and painful. The family, presuming that it was a bad cold contracted while out in the snow with her sled, began using the ordinary home remedies. The second day the eye was much worse, with swollen, puffy lids, purulent discharge and very painful. The family physician was then called in. On the third day all the bad symptoms were intensified. At this point the case was turned over to me.

Examination showed violent purulent ophthalmia; chemosed ocular conjunctiva, but while it bagged out over the limbus the cornea, as yet, was transparent, although it showed evidence of superficial involvement.

With the anxious family around awaiting a verdict I felt, as many a prudent doctor has felt before, that discretion was the better part of valor, and so contented myself with the statement of the serious nature of the disease, warning them of the danger to the eye, as well as of contagion to other eyes. A trained nurse was ordered, and then a

treatment, similar to that used in the first case was begun, with the addition of a once-a-day use of a 2 per cent. solution of nitrate of silver.

On the fourth day an ulcer spot appeared on the lower corneal quadrant, which increased with rapidity, until the bulging post elastic membrane pushed up from the bottom of the ulcer spot, like a little bladder, which finally ruptured, followed by prolapse of the iris.

All irritating local application, except the protargol, had been stopped and *Atropine sulph.* commenced at the first sign of ulcerations. Then powdered Nosophen was dusted on the ulcer, as in the first case.

Almost immediate impression was made on the violent inflammation, which was brought to a standstill within twelve hours; and the next day the progress, for the better, was plainly evident. The ulceration was under control. The small prolapse of the iris did not increase, but was lessened by the action of the *Atropine sulph.* Each succeeding day the secretions grew less and less; the inflammation better and better, until, in two weeks, there was very little pus evident. The ulcer spot had diminished to one-half of its original size, and was filling up in the usual way on the road to recovery.

The Nosophen was continued once daily. The protargol, 4 per cent. solution, twice each day, and the boric acid every two hours. This line of treatment was continued, with diminishing frequency as the case grew better, resulting finally in recovery of the eye, but with a small posterior synechia at the ulcer-region, which now remains under a small spot of corneal cicatricial opacity. The vision of the involved eye is nearly as good as in the other eye.

I am thoroughly convinced that this eye would have been totally lost under any other treatment I am familiar with.

The diagnosis gonorrhœal ophthalmia was verified in each case by the plentiful presence of the gonococci of Neiser.

While I recognize that two successful cases are scarcely enough to establish an unvarying law, the favorable results obtained in these two briefly outlined cases certainly must commend the treatment used to any one who may know nothing better. On my own part I shall not have the slightest hesitation to continue it under similar circumstances. And I confidently leave it for your favorable consideration.

RETINITIS ALBUMINURICA.

B. I. BARBEE, M. D.,

Columbus, Ohio.

THE object in selecting Retinitis Albuminurica for my subject is to hear the opinion of the members of the Society in regard to the treatment. As the eye trouble is secondary to the kidney disease, is it the oculist's, kidney specialist's or general practitioner's place to treat it.

In diagnosing a case of retinitis albuminurica, if case is not referred by a physician, it has been my custom to refer the patient to their family physician for an examination of the urine for albumen, to make sure my diagnosis is correct. It has been my experience, the physician making the examination takes for granted the patient is his, and commences to treat it forthwith, without even consulting the oculist in regard to the condition of the eyes; on asking one doctor over the telephone what he was giving a case that had gone to him for an urinalysis, his reply was: "Oh, nothing to interfere with what you are giving, or will give the case," and for fear my treatment would interfere with his I let him continue the treatment alone; result, funeral in six weeks. If the patient had taken treatment from both of us at the same time it might have been earlier.

A certain form of inflammation of the retina is often met with in Bright's disease, and since the introduction of the ophthalmoscope it is a well-known fact nephritic retinitis is often diagnosed by the oculist before the general practitioner, or even the patient, is aware of any kidney affection. It is claimed by some oculists the presence of Bright's disease can be diagnosised with certainty by means of the ophthalmoscope, but I think it very doubtful if it can be done at the outset of the disease. The eye symptoms vary as the disease progresses. In the past year several cases of retinitis albuminurica have come under my observation in various stages of the disease, but when informed the kidneys were the seat of the trouble the patients found treatment elsewhere, and their visits to the oculist were very limited, which did not give the desired opportunity of observing the eye changes in the latter part of their sickness.

Mr. C——, thirty-five years of age, printer by trade, called to see me

last September on account of dimness in vision; his eyes had been tested by an optician about one year previous, and at that time, as the optician informed me, he required O. D. 55 D. C. Ax. 90 O. S. 55 D. C. Ax. 90, which seemed to correct all visual defects. While at work, the sides of the squares set up looked dim and crooked, and he called the foreman's attention to it, who informed him the things looking crooked to him were straight. He called at my office the same day, and the usual test showed O. D. V. $= {}^{20}/_{200}$, O. S. V. $= {}^{20}/_{200}$. Glasses would not improve vision; an opthalmoscopic examination showed optic nerve head reddish and swollen, with a grayish opacity surrounding it, obscuring its outlines with small hæmorrhages of a flame like form, veins dilated, arteries contracted, white patches in retina, which were mostly in region of macula. I diagnosed the case albuminuric retinitis, gave *Gelsemium,* and requested to have family physician make urinalysis, and report in a couple of days, which he did, with a statement that the urine contained large quantities of albumen. The eyes at this time showed a slight improvement, but two days later were worse, and continued to grow worse, with vomiting mornings for two weeks. When I told him it was impossible for me to do the eyes any good after this, he failed to show up, but I learned that he died six weeks later. In this case, the patient did not know there was anything the matter outside of the eye trouble. Had not been sick or taken any medicine for the past two years. Kidneys had not given him any trouble; had been working steadily at his trade; a good and industrious man, with regular habits, and temperate in every respect. I did not give the patient medicine after the first visit, because the family physician commenced to treat him after making the urinalysis, and I let him continue the treatment.

Miss L——, twenty-six years of age, called to have eyes examined on account of poor vision and pain in head. A tumor had been removed from left side of head about one year before, and the physician who performed the operation diagnosed the case as tumor on the brain. The examination showed vision O. D. $= {}^{4}/_{200}$, O. S. $= {}^{10}/_{200}$; no material improvement from glasses; the fundus was similar to the previous case, only much worse. The papilla and retina were greatly swollen, and at places the vessels entirely disappeared from view. Upon examining the urine, it showed albumen in large quantities. I only saw this case twice, but heard she died about three months later; the vision gradually growing worse as the disease progressed, until she was almost blind.

Another case, entirely different from the previous ones: A man, aged fifty-eight, called by request of his physician, knowing that albumen was present, to have the eyes examined, and get my opinion of the case.

The eyes, in regard to vision, were about normal for a man of his age. The fundus showed no signs of the disease outside of a few white spots in region of the macula. This case complained of kidney trouble for the past two years, and has been under the care of a physician almost continually during the time.

There is one symptom that was present in the cases mentioned, and I have noticed it in many others, that is, the peculiar odor of the breath—it is hard to describe, but will call it a sweetish, sickening, offensive smell. Perhaps you have all noticed in your cases, as one is liable to get a dose of it while using the opthalmoscope. I merely call your attention to this symptom because I have never heard it spoken of, or seen it mentioned in any works on the subject.

Mrs. S——, age twenty-four, pregnant three months, referred to me by family physician for failing vision, O. D. = $^{20}/_{50}$, O. S. — $^{20}/_{60}$,—glasses made but slight improvement, and, upon examining the fundus, while the symptoms were not marked, I suspected albuminuric retinitis, and requested the physician to make an examination of the urine, which he did, and found albumen. The case miscarried soon after, and examination of the urine showed albumen had disappeared, and vision became normal.

Some observers have noticed other complications besides those in the retina, such as plastic iritis, embolism of the central retinal artery, iridochoroiditis, cataract, glaucoma, cerebral apoplexy and subconjunctival hæmorrhage. The cause, I think, is in doubt why, with Bright's disease, we should meet with a special form of retinitis that, from its appearance, be able to with the ophthalmoscope diagnose almost to a certainty the presence of albuminuria. As the kidneys are the primary cause of the eye trouble, it may be due to the amount of urea in the blood, causing an impairment of the nutrition of the retina. It is thought by some observers the heart plays an important part in the disease, but from the cases which I have examined the heart did not seem to be affected.

There may be some member present who can give us new light on the subject. If not, it remains for later observers to determine the dependence of one upon the other.

Albuminuric retinitis may occur in all forms of kidney disease which produces albuminuria. It is supposed the granular or shrinking kidney

is more liable to produce the eye affection than the large, white kidney, and more rarely still, in cases of exanthemata, especially after scarlet fever, and during pregnancy.

According to some authors an amyloid degeneration of the kidneys in syphilis, tuberculosis or suppuration of bones may be followed in the later stages by albuminuric retinitis and diabetes. Traube considers hypertrophy of the left ventrical of the heart as the pathological factor in the production of albuminuric retinitis. Leber says it is not. Von Grafe and Leber say that the uræmic condition of the blood is the cause of the retinitis. While preparing my paper I notice an article written by Dr. B. C. Clark, of New York, where he reports several cases of acute albuminuria in children following vaccination.

The diagnosis in albuminuric retinitis by the oculist is not usually difficult, since there is no other form of retinitis which presents so characteristic a picture. Imperfect vision in both eyes, the peculiar breath, white spots in vicinity of the macula, which are usually well-defined; retinal hæmorrhage, linear and flame-shaped, extending along the arteries, which are sometimes obliterated in parts; optic nerve is often swollen and indistinct. Neuritis and neuro-retinitis are observed in the more advanced stages of the disease.

The presence of albumen in the urine would, of course, confirm the diagnosis. The prognosis, as regard to vision and life, is bad, but if some improvement in sight occurs, not considering Bright's disease of pregnancy, exanthema and vaccination, albuminuric retinitis is an indication of a serious affection, and an early termination of life. The duration of life after the appearance of the retinitis varies, depending somewhat upon the nature of the renal affection, and upon the conditions under which the patient lives. Statistics show that, taking all classes of cases together, exclusive of pregnancy cases, a very large proportion—from seventy to eighty per cent.—die within twelve months from the date of the onset of the retinal disease, and that over ninety per cent. die within two years. Patients who are in a position to live under healthful conditions, and will carry out the form of treatment prescribed, live longer than the poor who are not in a condition to follow the instructions advised by the physician. The two patients previously spoken of in this paper, Mr. C—— and Miss L——, lived under the most favorable conditions, and one lived but six weeks, the other three months, showing that under the most favorable circumstances in these cases life was of short duration. Albuminuric retinitis of pregnancy is much more favorable than in other varieties, both in relation to

vision and life. Statistics show recovery of full vision in sixteen per cent. and recovery of partial vision in fifty-eight per cent. In albuminuric retinitis of pregnant women the question may arise whether it is advisable to produce premature labor.

It is the opinion of some authors it should be done if severe retinitis be present. If the kidney disease is liable to cause blindness in pregnancy, I think it a good practice to inform the pregnant woman and husband of the seriousness of the eye affection, and let them decide upon the course which they wish to pursue. It may be advisable to caution the woman not to become pregnant the second time. In the treatment there is little to be done locally. I generally prescribe colored glasses to protect the eyes from the bright light, and do not permit the use of the eyes for reading or working. The principal treatment should be directed to the primary disease—the kidneys. Dr. C. S. Neiswanger, in an article before the Chicago Electro Medical Society, states that he has cured a number of cases of chronic Bright's disease of the kidneys by electricity. In fourteen cases of this disease in which the diagnosis was made by experts all were cured. He states the treatment was by static electricity, and no medicine was given in any case. The treatment consisted of negative head breeze for fifteen minutes, followed by positive insulation fifteen minutes. Physicians having patients suffering with this disease might give it a trial. It will do them no harm, if it does no good.

The milk diet seems to stand at the head of the list with many as a food while treating this disease. Whether it is beneficial or not I am unable to say. Case C—— was put on the milk diet, and a few days later complained of feeling very weak. It is my opinion that in a disease of this character, when the patient has but a short time to live, they can select their own bill of fare without doing themselves as much harm as a strict milk diet will do.

As to remedies, I have nothing new to offer. *Apis, Arsenicum* and *Gelsemium,* the old ones with which you are all familiar, are, perhaps, the three principle ones, and will come nearer than others in meeting the totality of symptoms.

DISCUSSION.

George Rhoads, M. D.: The writer of this interesting paper on "Retinitis Albuminuric" states at the beginning that his reason for selecting this subject was to get the opinion of the members of this Society as to who should treat such cases, the family physician or the oculist.

The best good of our patients should ever be our aim.

It is my belief that we cannot do right by our patients or by ourselves if we undertake to treat such cases after we are convinced that the disease is traceable to the kidneys, unless we make the kidneys a specialty as well as the eye.

It is my invariable rule on diagnosing a retinitis with hæmorrhages, or hæmorrhages without retinitis, to advise the patient to at once consult his family physician and to have the urine carefully and repeatedly examined.

If, as is usually the case, the kidneys cause the trouble, the physician has the patient come to me occasionally, so that I can watch the progress of the disease and advise with him if needful.

Not all patients will come back and not all physicians will advise them to, nevertheless I feel that I have taken the only right course, and my experience has been that it is better for the patient and better for me professionally and financially to take this course.

There is little for us to do in this disease but watch its progress, advise the abstaining from near work and wearing smoked glasses.

The dietetics and hygienic treatment are of the most importance. Medicine is of doubtful utility. Able physicians of both schools of medicine tell me that they place more and more dependence on the general care of such patients and less and less on medicines.

The doctor mentions cases of chronic nephritis cured by static electricity.

I am inclined to doubt the reliability of these reports. Static electricity has, no doubt, a tonic effect, especially when combined with careful dieting.

Retinitis albuminurica is easy to diagnose, but on account of its cause hard to cure.

I doubt that the retina is more liable to disease in chronic nephritis than other organs. We all know that the lungs, bronchi, stomach, heart and brain are liable to inflame and take on degenerative changes, due, I suppose, to the weakened power of resistance of all tissues because of the urea.

THE PREVENTION OF MYOPIA.

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MYOPIA may be regarded as the result of an abnormal evolution, slight hyperopia, or emmetropia, being the normal.

Hyperopia being the rule at birth, provisions of nature, everything being equal, are such under ordinary circumstances that they tend to bring about a state of emmetropia. When from any cause it goes beyond this point evolution must be considered as abnormal.

Structurally at least the highly myopic eye may in general terms be regarded as attenuated or stretched, not only in all its coats, but in all its parts within the orbit. This attenuation of the parts not only weakens them functionally, but also structurally, and as myopia advances each tends to increase the other; thus becomes established a viscous circle that becomes reactionary, the low and moderate errors simply showing a modified state of this condition. The changes in the ciliary muscle due to this attenuation, causing weakening of accommodation, or complete loss in high degrees, at a time of life when accommodation should be active and in use, as well as the many pathological changes which are often present, are well understood, and need no further mention in this paper.

The period when myopia is acquired is at a time of life when functional activity in relation to development and shape of all parts of the body is at its greatest. To see that the functions of the eyes are kept in harmony during this period of growth, so as to aid nature in producing normal development of the eyes, and indirectly beneficially affecting the whole economy, is the purpose for which this paper is written.

The causes of myopia, inherited tendencies, excessive use of the eyes at the near point, especially under unfavorable conditions; poor light, food and ventilation, lack of out-door exercise, poor health, etc., etc., all have an important bearing on myopia, and are usually given the consideration they deserve in the treatment of these cases; but the main causes, inharmonious action of accommodation and convergence, if well understood, do not receive the scientific attention they deserve. Inharmonious action of these two functions is, I believe, far more potent

in causing myopia than the general causes previously mentioned.

I think this can readily be understood when we consider just what takes place physiologically in these eyes during use, especially during their use at near work. Although all forms of heterophoria and refractive errors requiring ciliary action take an active part in causing myopia, exophoria I feel has a more serious influence than any other muscular irregularity or the refractive errors above mentioned.

In order to show how muscular and refractive errors establish this viscous circle, and cause it to become reactionary, a case of emmetropia with four degrees of distant and fifteen degrees of exophoria at the near point will be taken. This case is chosen simply for illustrative purposes, but the principle involved applies to all forms of refractive and muscular errors, its deleterious action usually becoming more intense the higher the errors and the greater the difference between the refractive and muscular disturbances.

An emmetropic eye, with four degrees of distant and fifteen degrees of near exophoria, sees at infinity with a ciliary muscle in a state of rest, but must converge four metre angles to maintain clear, distant binocular vision. At the near point, or thirteen inches, three dioptres or the normal amount of accommodation is used, while convergence must be fifteen metre angles, instead of three, the normal amount; while this excessive convergence is being overcome, what takes place physiologically in the other parts of the eye, and especially in those parts being supplied by the third nerve? In answering this question the theoretical conclusion (reached by logical reasoning) for believing that exophoria is more productive of myopia than is esophoria, as well as the reasons for believing that disturbances of muscular and refractive equilibrium are the main factors in causing myopia, will be explained.

The internal recti muscles receiving their nerve supply from the third nerve, which also supplies all the muscles except the external recti and the superior obliques, as well as the circular fibres of the ciliary body and iris, bring a greater number of muscles and essential parts of the eyes into active action than would be the case if an esophoria of the same degree existed; third nerve action upon the internal recti cannot be entirely independent, but in some degree causes active action in the other structures supplied by it. We have proof of this in the fact that hyperopia causes convergent strabismus, and that exophoria often causes spasm of accommodation. Irregularities of the superior and inferior recti, and inferior obliques, as they are supplied by the third

nerve, at first, might seem to be as important causes as exophoria; but, both because their degree of error is limited, and the fact that they are not so intimately connected with the act of accommodation as are the interni, gives them a secondary position to exophoria.

Now it is a well-known physiological law that activity of any part requires increased blood supply and that nutritive and waste materials are increased during this time. Under normal conditions nutrition certainly exceeds waste at this time of life, but under this abnormal condition waste often exceeds assimilation, and we get attenuation of structure by loss of tissue by absorption, as well as by mechanical pressure, caused by muscular irregularities. In other words, I believe we have a forced state of activity, which tends to congest and weaken the parts, producing a state of local mal-nutrition. In the changes which we find in the choroid of myopic eyes, especially highly myopic eyes, we have positive evidence that absorption has had a powerful hand in causing these changes, the thinning being out of all proportion to the amount of stretching these parts have been subjected to; this applies to all cases of generally thinned choroid, whether or not accompanied by more serious choroidal changes, which are signs of former inflammation. We may readily assume that there is a state of general congestion in the choroid and adjacent retina in these eyes, at least during the time they are active, and that this congestion is due to the increased blood supply, primarily caused by the disturbed equilibrium in the functional workings of the different parts of the eyes, and that this congestion is the main cause of the thinning, the mechanical pressure aiding, but in itself not being sufficiently powerful to produce the marked attenuation. If further proof was necessary that absorption was the main factor in attenuating the tunics, we have it in the cases of high myopia, which show no marked attenuation or changes in the choroid or ciliary body; whereas, if stretching was the main cause, these high degrees would all show a markedly attenuated choroid, which is not the case.

Our efforts should be directed to bring about normal evolution by establishing and maintaining normal refraction and muscle balance, thus bringing about normal functional activity. To be more explicit, a systematic examination of all children should be made at stated intervals, the time depending upon the conditions present. All manifest hyperopia or compound hyperopia, together with any muscular irregularity, should be corrected, the method employed depending upon the amount of total hyperopia, and muscular errors, and the effect the errors have

upon the eyes and the individual; small errors of hyperopia, if evolution is normal, and no reflex symptoms are manifest, may simply need watching, but should hyperopia tend to cross the line to myopia then it becomes essential to correct all errors, be they ever so small, so that normal efforts shall be made at all distances. If myopia tends to become progressive, then it is absolutely necessary to establish equilibrium at all distances, and especially at the near point. I consider it a grave error to prescribe weaker lenses for the near point when accommodation is active, especially if exophoria exists. I also believe it wrong, when accommodation has become weakened, and weaker lenses are required, or when no lenses are tolerated, to ignore the exophoria, either distant or near, which usually is present in these cases and which increases inversely to the degree of correction that is born. We should endeavor in these cases to cause as nearly normal functional activity as is possible by establishing harmony between accommodation and muscular action; thus we will work hand in hand with nature, aiding her to accomplish her work as was intended. When this method of working hand in hand with nature is universally practiced, and extended in its scope to include proper attention to general laws in relation to the development of individuals in all their parts, especially during the growing period, then may we look for a more robust race, with not only a larger proportion of normal eyes, but also a larger number of perfectly developed people, both physically and mentally.

DISCUSSION.

G. De Wayne Hallet, M. D.: Dr. Suffa states that exophoria is more *productive* of myopia than is esophoria, and it is the common finding that exophoria is more usual with myopia than is esophoria. It is interesting then to note the results of 33 successive cases of myopia taken from my current record book. I am sensible that this number is a small one, and I would gladly avail myself of the larger material of the N. Y. Ophthalmic Hospital were it not that the small number of assistants in the clinic has precluded the keeping of records which could be used in this manner.

Of these 33 cases, 3 had authophoria, 19 esophoria and 11 exophoria. The average esophoria was 3½°; exophoria, 2°; adduction, 19°, and of abduction, 5½°. The fate of many cases of progressive myopia being assumed as the possible fate of all has given rise to all sorts of theories, supported either by statistics, anatomy or experiment, to account for this progression which occurs during adolescence, and to a corresponding number of more or less unpractical proposals as to how such progression is to be prevented. Much good has come from this agitation, however, as it has led to marked reforms in school hygiene and physical training.

We can see that near vision may, in various ways, provoke the production and favor the progress of myopia in eyes predisposed to it. Near vision necessitates convergence, which is inseparable from muscle pressure.

There can be no doubt about this point, for in a state of absolute rest, or under the influence of an anæsthetic or syncope, or after death the eyes diverge. The contracted internal rectus presses on the eye, and the external rectus and inferior oblique, being rendered tense at the same time, likewise compress it. Moreover it is unlikely that the muscles of the eye ever act entirely separately. All of them contract more or less, even when the effect is as of one single muscle. Were it not so there would be a lack of steadiness in the eye, and it would not turn about what is practically an immovable centre. It was Von Ault who first advanced the theory that pressure of the inferior oblique and external rectus muscles upon the posterior ciliary vessels caused hyperæmia, venous stasis, inflammation and softening of the sclerotic at the posterior pole of the eye. Later Fuchs demonstrated that one of the *vena vorticosæ* was pressed upon by the inferior oblique during convergence. Then, also, the tendency of children to read at too close a range provokes a ciliary spasm, and the persistant undue convergence increases the pressure on the temporal side by the stretched external rectus. Here we have congestion, a turgid ciliary muscle, traction on the choroid, hyperæmia at the fundus, and a favorable state for increase of the antero-posterior diameter and stretching where the resistance is the least. In such cases may we not consider the myopia a symptom and the above process as the disease. So, too, the continued lessening of hyperopia in adolescence may be a pathologic change, but usually only recognized as such when it has passed over into myopia.

The myope has to exercise little or no accommodation, and he experiences a difficulty in associating with it the greater degree of convergence required. Thus we often find convergence defective.

The special plea made by Dr. Suffa is for a full correction of all myopia, and to be worn for all distances. This is a subject upon which there has been much controversy and strenuous views are maintained on both sides of the question. It is quite generally agreed that the more or less continued use of Atropine is at times of benefit to the myopic eye.

The reason of this is also generally agreed, I believe, that it puts at rest the ciliary muscle; that it quiets a state of forced activity in this muscle, the choroid and at the fundus.

If, then, there is benefit to the myopic eye by preventing accommodation, how can it fail to be harmful to fully correct the refractive error? A fully corrected myope is in the position of an emmetrope or a hyperope, in that they must call into use a larger degree of accommodation at the near point.

Landolt says one would make a serious mistake to reason that full correction for near and distance should be given the myope, because it makes him emmetropic.

Konigshofer advises no lens for near work in cases of myopia of less than three dioptres, and a little less than full correction for distance in the higher degrees.

Fuchs states that patients having less than two dioptres may have the correction for distance if they want it; that the cases of two or seven dioptres often need a full or a part correction to obviate a too undue convergence. For the higher degrees, or where the accommodation is small, the distance should be slightly under-corrected, and for the near point that glass that gives a fair range.

Turnbull says full correction is a fatal common error, and that the near point should be fitted for sixteen inches.

In the higher degrees most myopes complain that a full correction gives them a feeling of strain.

My own view, as the result of clinical observation during the last twelve years, is that the lesser degrees of myopia (up to 3 D.) should have full correction for constant use. I find, nevertheless, that but a small number of these will use their glasses at the near point. Those having from 3 D. to 8 D., full correcting lenses for distance, and that which gives them the best near vision range.

The higher and progressive cases (16 to 24 D.) will seldom want, and, I believe, should not have, more correction than from 8 to 11 D.

The full correction of all astigmatism after examination under a cycloplegic is one of the most valuable methods of prophylaxis against the development of myopia.

In spite of what we believe, and whether they wear full or part correction, or whatever other methods we use, the fact remains that myopia will advance till adult life to a moderate degree, in some cases, and then become stationary, while others, with no apparent good reason, will, both before and after school life, be progressive and malignant. Who can say if the exophoric state is a causative factor or simply a product of myopia?

Aside from full refractive correction the doctor fails to mention what he would do for the exophoria, as he also leaves us in the dark as to the harmony he would establish between accommodation and muscular action, when, by reason of age or other cause, accommodation is lost or lessened.

E. D. Brooks, M. D.: There is one point about this subject that I am not sure was mentioned in the paper, and that I regard as very important. I want to emphasize it. When we have a case of myopia to fit with glasses, one in which there is still a normal power of accommodation, the eye should receive full correction for distant vision and then the patients should be instructed to use the same glasses for near vision. If they do not use them, and the accommodative apparatus is never used at all, it undergoes gradual atrophy from lack of use or normal function.

First ascertain that the patient has some power of accommodation and then insist upon his using the glasses for full correction of distant vision, for reading and for near objects. I regard it as bad prac-

tice to allow the ciliary muscle to become atrophied from lack of use when we have the means of preventing it. When this is done, early in life especially, it will not be found necessary to change the strength of the lenses for long periods of time, and perhaps not at all. In one case that I have the lens has not required any change in five years. In another there has been no change in the error of refraction for four years.

EXOPHORIA WITH TREATMENT.

BY ALICE V. DUFFIELD, M. D.,

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THE writer is aware of the diversity of opinion regarding the treatment of the phorias generally, especially exophoria where complicated with hypermetropia or compound hypermetropic astigmatism. Several cases with the latter two conditions having presented themselves for treatment in a short time led to a careful study of the subject.

The paper is presented to those of much larger experience, hoping to receive assistance in the management of these most troublesome cases and also to encourage some in non-operative measures, or at least to delay such measures. If this were done we would have fewer of those puzzling cases, which having already received surgical treatment, the real cause of the exophoria having been overlooked, the patient presents himself with a condition worse than the first after recovering from the original cause of his trouble.

It is not to be understood that surgical treatment is to be entirely ignored, but to be used as a last resort, and depending upon whether the exophoria is organic or functional.

The difference between exotropia and exophoria should also be borne in mind in selecting our line of treatment. Exotropia is squint or divergent strabismus, while exophoria is only a tendency of the visual axes to turn outward, and can be proven only by certain subjective tests, as by prisms.

While the symptoms of exophoria are not peculiar to this condition, patients complain after doing near work of pain in the eyes, generally on the inner side; frontal and occipital headache, pain and stiffness in the back of the neck or down the spine.

A diagnosis of exophoria having been made, it is our next duty to determine if possible the etiology. Some cases defy every attempt at this, but the causes generally assigned are those depending, as Fuchs says, upon anatomical conditions, as the size and insertion of the muscles, the size of the eyes and their distance apart. Other causes are over-stimulation of an ocular muscle by degenerative disease of the

brain or spinal cord, or irritation from pressure in middle ear disease; also, anæmia or neurasthenia following some protracted illness and over-use of the eyes in convalescence, especially in hyperopes; last, but not least, refractive errors. Therefore the internal medication and hygienic treatment are of great importance. While exophoria may be caused by some systemic trouble, it must be remembered that it may be the cause of some functional disturbance, which can be relieved by operation only.

Regular prism exercise, together with galvanism and massage of the weak muscles, can do much to help these unfortunates.

While some may have had success in prescribing the wearing of prisms in these cases, the writer in considerable experience in two of the largest clinics in Chicago has failed to see a single case of exophoria, complicated or uncomplicated by hypermetropia, which has been permanently benefitted by their use. If there is no latent exophoria in presbyopic cases, where we are obliged to give the convex glass, it may be well to combine a prism with the presbyopic glass.

From what I have observed as a general rule the wearing of prisms in these cases seems worse than useless, unless the object is to develop all of the latent exophoria prior to operative treatment. The method simply deprives the interni of the little power they may already have in the beginning, weakening already weak muscles, as in the following case: A young man twenty-four years of age, highly neurasthenic and anæmic, and poorly fed, struggling for a college education, appeared at one of our large clinics. He said that he had the most intense headaches and was driven nearly crazy on attempting to study. The patient said that an oculist had told him that he had 5° of exophoria. The same oculist had prescribed for constant use, as nearly as can be remembered, a + 1. D. Sph. ⊃ + .75 D. Cyl. Axis 90° in each eye, combined with a 5° prism, base in, divided between the two eyes. Upon examination these glasses were found to express all of his manifest compound hypermetropic astigmatism, and also that with his glasses on he had developed 5° more of exophoria at twenty feet, making a total of 10°.

The prisms had helped him for a few days only, he said, but he had been struggling to wear the glasses for six to eight weeks. The internal and hygienic treatment had been entirely forgotten.

This is one of many similar histories which have come to my knowledge.

The method of prism exercises is largely that suggested by Dr. A.

B. Norton in his valuable article published in the January number of the "Homœopathic Eye, Ear and Throat Journal," 1901. The paper has been of such assistance to me that it was thought no harm to bring the subject before the society again, although there is little new to present.

I have found that better results with prism exercises are obtained after the patient has had a good meal, and will never give a treatment if he is either tired or hungry.

Exercise with prisms is given at first every other day for five to ten minutes, beginning with a 1° prism, base out, increasing by 1° until the patient shows the slightest effort in overcoming the prism, when he is allowed to rest for two to three minutes. Then beginning with a little higher prism, 2° or 5°, or higher, according to the case, the exercise is continued, and with the second appearance of fatigue the treatment is discontinued, and, having no static machine, weak galvanism is applied, followed by massage of the weak muscles, when the patient is dismissed.

The second day we start with a higher prism and increase by 1°-2°, and exercise until signs of fatigue appear, when galvanism and massage are given as before. On alternate days, at home, the patient practics converging once or twice a day, but never if tired. Night and morning the eyes are bathed for a few minutes with cold water simply for the tonic effect. After the first week the office treatments are given three times weekly, then twice weekly. As the muscles increase in strength the treatments are given less frequently, every two weeks or once a month, according to whether the muscles are holding their own or not. With increasing power of adduction, we may start an exercise with a 15° to 25° prism, and increase by 5°, according to the case. We must never forget to test frequently lest we cause an esophoria by over-exercise.

While a large percentage of our cases may show exophoria, it may be ignored unless causing trouble. According to the refraction of the patient cases have been treated in the following manner with a fair measure of success: The concave spherical glass has generally been the only thing necessary to help exophoria with myopia. With exophoria and simple hypermetropic astigmatism, all of the astigmatism has been corrected if the axis has been 180° and the muscles exercised. The nearer the axis of astigmatism has approached 90° the less of it has been corrected, as little as the patient can get along with, and the more carefully the muscles are exercised. In cases of compound hy-

permetropic astigmatism, the astigmatism has been corrected as above, and as little of the hypermetropia as possible, never forgetting that the convex glass increases the exophoria. These latter are the cases which especially need prism exercises for a protracted period. Much can be done even when the exercises are given less regularly than we could wish.

A young man twenty-two years old, clerk, neurasthenic, although strong and healthy in appearance, complained of inability to do any steady work for a year on account of intense frontal and occipital headaches, with great pain in the inner side of the eyes; also, great pain and stiffness in the back of the neck. These headaches came on first about two years before. He had been fitted to glasses by two Chicago oculists, and one year before by an eminent French oculist, without receiving any relief. He was given by the latter for constant use + .50 D. Sph. ⊃ + 1. D. Cyl. Axis 90° for both eyes. No one had ever examined his muscles. Examination showed

Manifest

O. D. V. = $^{20}/_{15}$, accepted nothing

O. S. V. = $^{20}/_{20}$, with + .38 D. Cyl. Axis 90° = $^{20}/_{15}$

At twenty feet abduction 8°, adduction 6°, with exophoria 3°. At fifteen inches the exophoria was 5°. The ophthalmometer showed astigmatism of 1 D. Axis 90° or 180°.

He could not be put under Atropine at once, so prism exercises were begun at the office as described. He was also told to leave off his glasses entirely and take the converging exercises at home twice daily, after meals. At the end of one week his headache had disappeared, and he had read almost an entire day with perfect comfort, the first time in over two years.

Retinoscopy showed

O. D. + 1.50 D. Sph. ⊃ + .25 D. Cyl. Axis 90°

O. S. + 1.50 D. Sph. ⊃ + .38 D. Cyl. Axis 90°

Trial lenses under Homatropine gave.

O. D. V. = $^{20}/_{60}$, with + .75 D. Sph. $^{20}/_{30}$ ⊃ + .25 D. Cyl. Axis 90° $^{20}/_{20}$ +

O. S. V. = $^{20}/_{80}$, with + .50 D. Sph. $^{20}/_{30}$ ⊃ + .50 D. Cyl. Axis 90° $^{20}/_{20}$ +

After the effects of Atropine passed away he accepted

O. D. + .25 D. Cyl. Axis 90°

O. S. + .50 D. Cyl. Axis 90°

This prescription was given him, but, like the other glasses, aggra-

vated the case. Operation, or protracted prism exercise, was advised, and the latter accepted. Together with his brother, an allopathic physician, we gave him internally Strychnine and other tonic treatment. While his adduction could never be raised above 15°, after eight weeks of irregular treatments he was able to resume his regular work and continued to work with comfort for seven months without glasses with converging exercises alone at home. Whenever he neglected his home exercises a slight headache appeared. He was later obliged to go to South America, so I had made a set of prism bars from 1° to 15° with which his sister was to exercise the interni under instructions. The comfortable condition continued after nine months of exercises, the last I have heard.

A lady, aged forty, general health good, but never vigorous, complained of severe headache and great nervousness on doing near work, and thought she needed glasses, but did not want to wear them unless necessary. She had been wearing a + .50 D. Sph. in both eyes for near work given by an optician. Examination with ophthalmometer gave 1 D. Axis 90° or 180°. She accepted nothing. At twenty feet exophoria 2°, abduction 7°, adduction 8°.

Trial lenses under Homatropine gave.

O. D. V. = $^{20}/_{80}$, with + 1 D. Sph. $^{20}/_{40}$ ⊂ + .50 D. Cyl. Axis 60° = $^{20}/_{20}$

O. S. V. = $^{20}/_{80}$, with + .75 D. Sph. $^{20}/_{80}$ ⊂ + .50 D. Cyl. Axis 120° = $^{20}/_{20}$

Exercises with prisms for two weeks regularly at first, then very irregularly for two weeks, brought her adduction up to 35°. She did not come to my office again for more than three months, when her adduction was 22°.

In the meantime she had practiced converging daily. She had been entirely relieved of headaches after the first week, and had done all of her near work without glasses with perfect comfort.

No glasses were prescribed, as the patient was entirely relieved of her headaches and has continued so for nearly one year.

Middle ear disease as a cause of exophoria is no doubt often overlooked. The question may be asked, how can middle ear disease cause an exophoria? In "System of Diseases of the Eye" this question is clearly answered as follows: "The cochlear branch of the eighth nerve enters the ventral nucleus, whence fibres forming the trapezoid body are thrown off. A certain number of the trapezoid fibres lead directly to the superior olive. From the superior olive a well-marked tract

takes a course toward the fourth ventricle and enters into association with the nucleus of the sixth nerve, thereby effecting a connection between the special nerve of hearing (cochlea) and the abducens supplying the external rectus of the eye."

As an example of this connection, Dr. Standish reports a case in which a man fifty-six years old, who had always had good eyes until a year before, when he began to have dizzy spells, and six days before his visit to the doctor's office was unable to walk with safety on account of an attack of vertigo. Examination showed an exophoria of 16°. The man was sent to another physician, who found the Eustachian tube closed, the membrana tympani depressed, with fair hearing. Dr. Standish says: "Treatment of the Eustachian tube immediately did away with the dizziness. The eye returned to its normal condition and the patient could walk in a straight line."

There are a number of cases of both high and low degrees of exophoria which I could cite which have been benefitted by the line of treatment brought out in this paper, but time will not permit. The writer closes by calling attention once more to prism exercises, internal and hygienic treatment, refraction and, last, surgery.

DISCUSSION.

Frank D. W. Bates, M. D.: In attempting to open the discussion of Dr. Duffield's paper, would say that we need none of us have any hesitation in expressing our views on muscular troubles in connection with the eyes; for if we do happen to make a mistake the majority of our hearers will not know whether we are right or wrong; in fact, none of them can say positively whether we are right or wrong, for none of them know very much about the subject themselves. This may not seem very complimentary to the members of our Society; but since I include myself among them I may be forgiven, especially as I have probably given as much attention to and had as much experience in this line as the majority of those present. And I may add that the members of our Society are as well up in that line as the members of any other society; for there is very little positively known on the subject by any one. We all have our own ideas, and are working away quietly, hoping for developments; but I for one must say that I have made very little progress, though I have given particular attention in that direction for the past five years and more.

The instruments we have for showing the various manifest phorias, while the best we have and good as far as they go, do not help us out very much. I have many times had the phorometer, maddox rod and other tests show from 8 degrees to 10 degrees of esophoria when there was apparently no muscular trouble at all, the manifest showing be-

ing wholly due to spasm of the internal recti muscles, and relieved immediately by wearing the proper glasses. I have also seen manifest troubles of the superior and inferior recti muscles (in one instance as high as seven or eight degrees), due to spasm, which was relieved by correcting sometimes a slight astigmia. But one thing I have never run across as yet, to my knowledge, is a case of spasm of the external recti; and my belief is that we never have spasm of the same. For that reason, it seems to me that of all the phorias exophoria is the easiest to get at and the easiest to remedy. Divergence of the visual lines cannot be produced at will, and when found I think must result from some abnormality. I do not agree with Drs. Hansell and Reber's idea that the conception of exophoria that seems to be nearest to physiological truth is that the outward tendency of the visual axes results from a loss of convergence impulse, and hence must be considered as a passive rather than an active condition. Of course, in cases of paresis of the muscles of convergence from any cause, we would have divergent strabismus, as we have convergent strabismus from paresis of the external recti; as we sometimes see following diphtheria; but in the cases where they claim that the exophoria has developed from a loss of convergence impulse, I believe that the exophoria existed before as an active condition, but was concealed by the stronger muscles of convergence until, owing to a lowered tone of the general system, there was less nerve impulse given to the muscles of convergence, thus allowing the exophoria to become manifest.

They claim that the exophoria was in those cases due to the lowered state of the system. I claim that it is more likely that the lowered state of the system was due to the exophoria.

I believe that exophoria is a condition that exists more frequently than is generally realized, and the reason we do not detect it is because it is mostly latent; and when it does become manifest from a lack of convergence impulse we are apt to look upon it as a new development from some remote cause.

In the case of the young man, mentioned by Dr. Duffield, highly neurasthenic and anæmic, who showed five degrees of exophoria, and after wearing convex cylindrical glasses with five degrees of prism, base in, for six or eight weeks presented himself showing five degrees of exophoria with the glasses on, the five degrees with the glasses on was clearly a development of latent exophoria. I take it that the writer considers the weakened condition of the muscles of convergence due to the neurasthenic condition of patient.

I should consider in that case the neurasthenic condition of patient due to the constant using up of nerve force, which had been going on for years, in the effort of nature to overcome his exophoria, and I would not have hesitated five minutes about performing a full tenotomy on one of the externi; and the probabilities are that later on it would be necessary to perform a full tenotomy on the other one also. Do not imagine, however, from the above that I am a tenotomy enthusiast, for I am not. I operate on a very small percentage of my cases, and have

never as yet had reason for regretting an operation; but when I run across a case which is as clear to my mind as the above seems to be, I do not hesitate.

As to the wearing of prismatic glasses, my experience differs from that of Dr. Duffield. I have a number of patients at the present time who are wearing with comfort and relief prismatic glasses as high as eight and ten degrees, divided between the two eyes. I have one patient upon whom I performed a full tenotomy on one of the externi who is now wearing ten degrees of prism, base in, with comfort, temporarily, until she can spare the time to have the other muscle operated upon. As a rule, where persons can wear prisms of that strength, with comfort they are fit subjects for operation; but many persons will not submit to an operation, and in those cases we have to do the best we can.

I find many cases of esophoria and hyperphoria corrected by giving glasses to correct troubles with the refraction, but few cases of exophoria have I been able so to correct, and those have been myopic cases. But I have comparatively few myopic cases to examine. (In looking over a few hundred refractive cases in my record books I find only about fifteen per cent. of the cases myopic) and the majority of the cases of exophoria I run across are in hyperopes, and sometimes very little trouble with the refraction; one in today shows + .25 hyperopic astigmia, and phorometer shows muscles balanced with 8 degrees of prism before the eyes, base in.

I have run across a great many cases of exophoria within the past year, more than ever before; probably because I have been looking for it, believing it to exist more frequently than is commonly supposed.

Now as to the method of overcoming exophoria by prismatic exercise of the internal recti-muscles, as I have stated before in discussion at one or more of the meetings of this Society, I do not believe in it.

We can by such method strengthen the internal recti to an enormous extent, and may do away with some of the symptoms directly due to the exophoria; but I believe we do it at the expense of the general system. I wrote an article in one of the journals, in '91, strongly advocating prismatic exercise of the muscles in various insufficiencies, but changed my opinion on the subject several years ago.

INTRA-OCULAR TUMORS INVOLVING THE CHOROID AND RETINA.

J. H. BALL, M. D.,

Bay City, Mich.

ATAPICAL growths springing from and involving intra-ocular structures are comparatively rare when compared with the frequence of the involvement of other organs by such growths.

The intra-ocular structures most frequently involved in tumor growths, and in which the growth is of primary origin, are the choroid and retina.

In the classification of foreign growths the microscopical structure is the evidence which establishes its place in the nomenclature of the pathologist.

So in considering this subject and classifying the growths which involve the choroid and retina it will be from their microscopical structure rather than clinical symptoms that the diagnosis will be made.

The malignant tumors which involve the choroid are in the majority of cases sarcoma, in a very few cases carcinoma and in still more limited number of instances adenomata have been observed. In all three of these conditions the clinical observations will be the same, and by these can not be differentiated. The microscopical structure here is the only means of differentation.

Differentation of these growths is of the greatest importance, for sarcoma of choroid is primary in origin, and if removed before secondary and metastatic changes take place a cure is insured, while in carcinoma and adenoma the involvement of choroid is always secondary, so that removal is simply palliative rather than curative.

Sarcoma may arise from iris and ciliary body, as well as the choroid, and it is a question if there is not a form of sarcoma which has origin in the retina. Other ocular structures are involved secondarily by continuity.

The sarcomota are connective tissue tumors characterized by a predominance of the cellular elements over the inter-cellular substance;

they are often characterized by numerous blood vessels. More frequently the tumor cells are in direct contact with the blood, forming blood spaces rather than blood vessels.

In occurrence the sarcomata are most frequently met in youth, and are even frequently found in fœtal life, when they probably arise from local malformation. They are of a marked malignant type, forming metastases, also extending by continuity. They are subject to various secondary changes, among the most striking of which is pigmentation. The presence of this pigment gives the tumor a peculiar characteristic appearance, which gives rise to it being termed melano-sarcoma.

It arises from tissues containing pigment in their structure, such as the skin and the choroid.

The pigment, or melanine, is deposited throughout the tumor cells in the form of fine brown or yellowish granules, the amount of pigment varying the microscopical appearance of specimen in accordance with the amount of pigment in tissue from which the tumor arises. This is the form of sarcoma which we find in the iris and ciliary body, as well as the choroid, where they vary from one another only in the amount and distribution of the melanine.

Melano-sarcoma of the choroid is a comparatively rare condition, primary in its origin; there may, however, be secondary sarcoma of the choroid in the last stages of sarcoma of remote organs; this, however, is of very rare occurrence, only two such cases having been reported.

It occurs most frequently in middle life, is malignant, extending both by continuity and metastases.

Microscopically we find many small, round cells, intercullar substance is very small in amount, blood vessels are numerous throughout the growth, and as a rule the tumor cells are in direct contact with the blood, showing little and often no vessel wall.

The pigment is deposited in enormous quantities through the tumor, completely occluding the cells in many places. Where the pigment is more sparingly deposited it will be seen to be a dark brown granular substance deposited within the cell, as well as in the intercellular substance.

In developing the tumor springs from the external layer of the choroid and grows inward, gradually pushing the retina before it, so that early in the condition the retina lies in direct contact with the tumor.

Symptomatology is divided into four stages:

1st—That of beginning detachment of the retina.

2d—Retina is completely detached, ocular tension is increased, glaucomatous attacks may be present.

3d—Ocular structures begin to break down and extension to orbital structures by continuity takes place.

4th—Is the stage of metastatic involvement of more remote structures and organs.

In illustration of this condition, I will describe the case of Mr. H——, which was examined in eye clinic of the University Hospital, homœopathic, at Ann Arbor during the very beginning of retina detachment. This case was watched throughout its course and presented a typical picture, beginning with a cloudy spot in the vision which the ophthalmoscope showed to be the point of beginning detachment. This gradually increased in size until it resulted in complete detachment. The case was kept under close observation for a few weeks, until glaucomatous symptoms set in, with sudden acute pain. At this stage enucleation was immediately made.

Macroscopically the specimen showed complete detachment of retina. About midway between the optic nerve and edge of ciliary body was a black mass, about the size of a bean, with a broad spreading base. The line of demarkation between the growth and the normal tissue was more or less sharply defined.

Microscopically the specimen showed the typical characteristics of melano-sarcoma, as previously described.

A peculiar thing occurred in this case. The patient was given a graphic description of detachment of the retina. He reasoned that if the condition was as described he could stand on his head and the retina would float back into place, restoring his vision while his body was inverted. This he proceeded to do, and strange to say the vision slowly returned as the retina floated back into place. Upon assuming an upright position again the vision gradually faded away. This incident is of interest, because it shows conclusively that the involvement of the retina is only mechanical and not structural. It is now some four years since this eye was removed, and the patient remains in perfect health.

Carcinomota are epithelial new growths, which consist of epithelial cells in a vascular frame work of connective tissue, imitating in form the various glandular structures.

These tumors are very seldom found in the eye, and when they do occur they are found in the choroid, of metastatic origin, never primary.

S. Schultze (Archives of Ophthal., Vol. XXIII, Nos. 1 and 2) reported one case of carcimona of choroid metastatic in origin. This tumor had the typical alveolar structure, with cell nests separated by meshes of connective tissue frame work. The tumor involved the sclera, as well as choroid; also, the nerve and sheath.

At the time of enucleation a question existed as to diagnosis of general condition, but in the eye the posterior ciliary artery was found plugged with carcinomatous embolus, showing metastasis from remote organs, thus giving a clear picture of the general condition from which the patient died later.

S. Kamocki (Archives of Ophthal., Vol. XXIII, Nos. 1 and 2) reported a case of metastatic adeno-carcinoma of choroid.

In this case, as in the other, there was no diagnosis of a general condition at time of enucleation, but shortly after the patient died of carcinoma of the stomach.

The tumor surrounded the nerve and was sharply defined from the healthy choroid.

Microscopically it was typical glandular tissue, the tubules and cavities being lined with epithalial cells, which are sharply limited from the connective tissue. In some places it gives almost cyst-like appearance cavities, lined with flattened epithelium and containing a colloid substance.

Altogether there have been some ten or fifteen metastatic carcinoma of the choroid reported.

But the above is the only case of adeno-carcinoma of the choroid ever reported.

Glioma are tumors which arise from the cell in the stroma of the *central nervous system* and are composed in their make-up of these cells.

In appearance they vary in color from light gray to a grayish white, have numerous blood vessels and are prone to undergo fatty degeneration.

They usually occur singly, do not form metastasis, but extend by continuity.

In the retina a tumor highly cellular, with cells closely resembling the nuclear layers, is sometimes found. This tumor is commonly classified as glioma of the retina.

Glioma, when occurring in the brain or cord, presents certain characteristics of structure which blend so closely with the tissue, from

which it arises, that it is often difficult to tell where growth leaves off and normal tissue begins.

Macroscopically its color will vary from light gray to grayish white, or even reddish gray, dependent on the number of blood vessels it contains.

Microscopically it is made up of many small round or oval nuclei. The cell protoplasm is not prominent, and is made up of a delicate network of small, glistening fibers. The cells resemble ganglion fibres, except that they are longer.

The blood vessels have a very thin wall, but the tumor cells do not in any place form the vessel wall.

The so-called glioma is the only growth which we find in the retina, where it arises in the nuclear layer, gradually involves the retina, pushes into the retro-bulbar structures; also, forward into cornea and sclera in time.

I have two cases of new growth in the retina which were clinically diagnosed glioma. They both presented widely dilated pupil, with the golden yellow reflex, which is supposed to be diagnostic of glioma of the retina.

Microscopically these tumors have a decided prominence of the cellular substance over the intercellular substance. The nuclei are prominent, but have very scant cell protoplasm; this protoplasm, however, does not have the fine fibrillar appearance, nor does it present the fine branching processes, as do the cells in glioma of the central nervous system.

Blood vessels are numerous, and in a few places may have a distinct but thin wall, while in many places throughout the growth the tumor's cells are in direct contact with and bathed by the blood. The tumor cells are grouped around these blood spaces in such a way as to give a tubular appearance in some portions.

There is no pigment deposited in these sections, as in carcinoma of choroid, for they involve no structures containing pigment.

One of these cases from which these sections came, after five years, shows no return of the growth, while the other died a few months after the operation of what was supposed to be an extension of the growth to the brain. Unfortunately no autopsy was made.

This condition is *always* found in childhood and usually involves but one eye. Clinically it shows the same four stages, as does sarcoma, involving ocular and orbital structures by continuity in third stage, while in fourth stage metatases take place to remote organs, usually the

liver. Frequently extension to the brain causes a rapid and fatal termination.

In comparison the retinal tumor gives metatases, as does sarcoma; true glioma does not.

It occurs in youth and probably arises from some fœtal change, as does sarcoma, while glioma is usually excited by traumatism.

Glioma undergoes fatty degeneration, while this tumor in the last stage shows ulceration and necrosis.

Structurally the glioma has the fibrillar and branching cells process. This tumor has not, but it does have large numbers of small round cells, with scant cell process and small intercullar substance, as does sarcoma.

In glioma blood vessels have a distinct vessel wall. This tumor shows blood spaces without vessel, which is characteristic of sarcoma.

These facts, I think, are sufficient to warrant the classifying of this retinal tumor with the sarcoma, rather than with the glioma.

Unfortunately there is no record of autopsy following an extension of this condition of the brain that gives us any idea of the microscopical nature of the brain growth if it be sarcoma or glioma.

I shall not attempt to classify this tumor as to its definite place among the sarcomata; suffice it that the tumor, the symptomatology of which points to it as a typical case of condition in question, is not glioma, but sarcoma.

DISCUSSION.

Royal S. Copeland, M. D.: The essayist has produced an able paper and deserves praise for his scientific discussion of debated questions. I have personal knowledge that Dr. Ball has been a student of microscopical conditions and is well-prepared to defend his conclusions.

Since the diagnosis of glioma, the correctness of which the essayist disputes, was made in my clinic it behooves me to prove its accuracy. Otherwise, I must "go way back and sit down." To justify myself, then, I will consider only the differential diagnosis of glioma, leaving others to discuss the remaining excellent features of the paper.

In order to discuss intelligently this question of diagnosis we must primarily consider first principles. Let it be recalled, then, that sarcomata develop only in tissues derived from the mesoderm. Further, the retina is ectodermic in origin. This is true, not only of its nervous elements, but also of its supporting tissues. Conceding that a sarcoma might spring from the connective tissue of a retinal blood vessel, a tumor coming from the retinal layers proper cannot be a sarcoma. Therefore, unless the growth in question sprang from a blood vessel wall it is not sarcoma, but, on the contrary, is glioma.

To build my argument securely there must be a substantial founda-

tion. You will forgive me, then, if I recall to mind some histological and embryological facts which are fundamental to the verdict in which I hope to have you join.

The essential constituents of the nervous system, the cells and fibres, are embedded within a firmly reticulated ground substance. The basis of this reticulum is the neuroglia, a peculiar form of ectodermic tissue, consisting of extremely branched elements, called glia cells. The numerous processes of these cells break up into brushlike bundles of delicate fibrils, which pass in all directions among the nervous elements, filling more or less completely all interstices.[1]

Neuroglia is found in the brain, in the spinal medulla, in the conarium, in the retina and in the auditory nerve. Glioma may arise from glia cells wherever they are found. It does not arise from any other tissue. It is, then, essentially a disease of ectodermic origin. As has been said, the only retinal structure of mesodermic origin, and from which a sarcoma could arise, is the wall of a blood vessel. Schobl, of Prague, is authority for the statement that not a single observer has found a glioma starting from a retinal blood vessel.[2] Therefore, a small round celled neoplasm arising from the retina in glioma and not sarcoma.

The section in question was made from an eye removed several years ago. The patient was a little girl, aged three. As Dr. Ball has said, the eye presented the golden reflex and the usual symptoms admitted to be clinically diagnostic of glioma.

My study of the microscopic slide has developed different results than those recorded by the essayist. He states that the "blood vessels are numerous, and in a few places may have a distinct, but thin wall, while in many places throughout the growth the tumor cells are in direct contact with and bathed by the blood."

A section so large as this presents many microscopic fields, so there may be substantial foundation for the positiveness of this statement. I am sorry I have been unable to verify it. While some of the vessels have very thin walls, seeming almost to be embedded in the intercellular substance, I have found no blood spaces where they have been absent. On the other hand, there are many fields where the vessel walls are as prominent, as shown in cut No. 1. Here, it will be observed, the wall is thickened, and if properly stained would probably show hyaline degeneration.

I agree with Dr. Ball that the tumor has large numbers of small round cells and scant intercellular substance, but I am not alarmed by the absence of the fibrillar and branching cell processes to which he calls special attention. He has overlooked the fact that glioma of the retina differs from glioma of the nervous system in that it is much less fibrillar and has its cells more closely packed.[3] However, the fibril-

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[1] See Piersol's Normal Histology.

[2] Schobl, Diseases of the Retina. Norris and Oliver, Vol. III, p. 557.

[3] American Text Book of Pathology, p. 1194.

lar nature of the intercellular substance in this case can be made out in several places. I fear his study of glioma of the brain has led the essayist to conclusions not justified by careful consideration of the disease met with in the denser tissues of the retina. As has been said, the cells in this structure are much more closely packed and, consequently, the ganglionic appearance does not appear. Furthermore, while the specimens exhibited show any number of round cells, there are in addition vast numbers of oval and irregular cells. This fact is shown by cut No. 2, drawn from one of many fields which may be demonstrated.

Finally, I do not agree with the writer that fatty degeneration is a necessity in glioma. It is of common occurrence in both diseases, but is not invariable in either. The ulceration and necrosis of which he speaks is quite as characteristic of glioma as of sarcoma.

Therefore, for the special reasons already given, and particularly because the growth sprang from ectodermic tissue, I think it is proven beyond controversy that the growth in question was correctly diagnosed as glioma of the retina.

THE STEREOSCOPE IN HETEROPHORIA AND INCIPIENT STRABISMUS.

BY DAVID W. WELLS, M. D.,

Boston.

JUST what constitutes the normal muscle balance is a subject about which there exists great diversity of opinion. It will probably not be disputed that the person whose vocation demands long-continued convergence is more annoyed by an exophoria than he whose eyes are for the most part fixed on distant objects. I have come to regard a moderate amount of esophoria as the desirable condition for most educated people. But this rule has many exceptions, and it is necessary to appreciate idiosyncrasies. Although there is some disagreement in defining orthophoria, no one will dispute that heterophoria exists and is a prevalent cause of asthenopia. That it may be due to refractive errors is demonstrated by the improvement in muscle balance, which frequently follows their correction. But it is the purpose of this paper to demonstrate that the lack or imperfect development of binocular vision is a very potent cause of both heterophoria and strabismus. Mr. Worth, of London, goes so far as to say:* "The one essential cause of squint is a defective development of the fusion faculty. This is frequently associated with other developmental defects, such as an abnormal shortness of the eyeball and congenital amblyopia. Hypermetropia, anisometropia and congenital amblyopia may any, or all, be present, *but with a normal fusion faculty* there will be no squint."

If the desire for binocular fusion is weak, heterophoria results. Undoubtedly a lack of balance of the extrinsic muscles may retard the development of binocular fusion, or lead to its suppression. These two factors act and react upon each other, and it is difficult in a given case to distinguish cause from effect.

It is now well established that the child does not acquire perfect binocular vision until his fifth or sixth year, so that orthoptic treatment of strabismus is less efficacious the longer it is delayed. My experience with this treatment of permanent strabismus has not been sufficient to warrant me in expressing an opinion, and I will confine my remarks to incipient divergent strabismus and heterophoria.

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*Lancet, May 11, 1901.

The intelligent diagnosis of a case of heterophoria is not complete until we know, not only if the patient has binocular vision, but of what grade. Mr. Worth* divides the faculty as follows:

1st (lowest) grade—Simultaneous macular perception.

2d grade—True fusion, with some amplitude.

3d grade—The sense of perspective.

The holding of a pencil in the median line, half way between the book and the eyes, proves by one's ability to read behind the pencil the use of *two* eyes.

Landolt uses Hering's test, which consists of an oblong box, with middle partition and sight holes at either end. Six inches beyond the box, in the median line, is a vertical post visible to each eye; marbles dropped within and beyond the post cannot be located as to distance, except by use of two eyes. But the finer gradation requires the use of

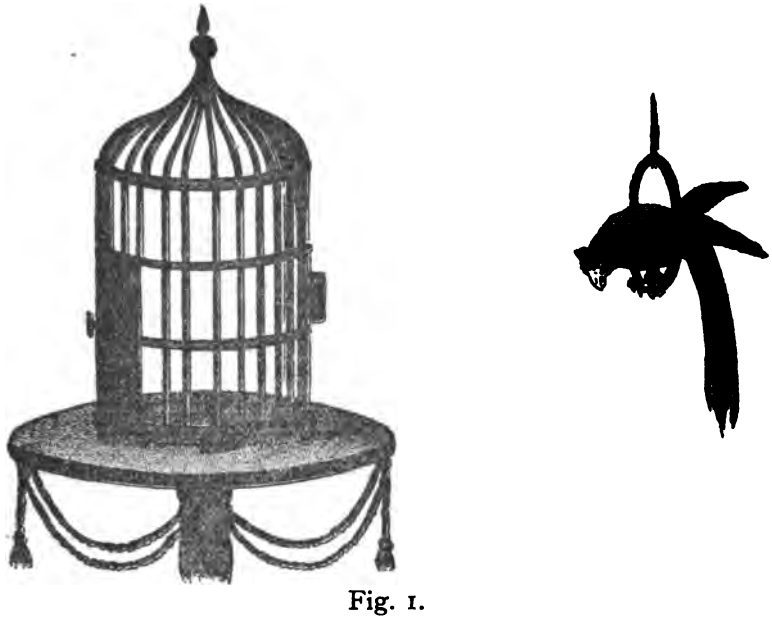


Fig. 1.

the stereoscope and appropriate pictures. Each eye must possess the power to fix, while the other is covered, before anything can be done with the stereoscope.

Assuming this faculty to exist, but suppression of one image habitual or occasional, it is well to commence with discrete pictures, i. e., of quite different objects. Kroll's colored set is very good. A mouse on

*Vol. XXI., Ophthalmological Soc. Transactions.

one side, trap on the other, or the bird and cage (Fig. 1), or the rose and flower-pot may be shown.

The larger picture should correspond with the unused eye. If the

Fig. 2.

image of the non-fixing eye is suppressed, the fixing eye should be "fogged" with a plus lens until both can be seen. This may be accomplished by seeing the pictures in rapid succession.

Fig. 3.

To prove *simultaneous* perception the objects must approach or recede with use of prisms, and patient must "put the bird in the cage," "the mouse in the trap," "rose in the flower-pot," etc. This constitutes binocular fusion of the first or lowest grade. The Worth amblyoscope quickly demonstrates this function. This instrument can be adapted to convergent or divergent strabismus, and unless this movement can be accomplished I consider the case hopeless.

The next step is the fusion of pictures with some points in common, e. g., one picture with girl and little dog at her side; other picture identical little girl holding a watering-pot over some flowers. (Fig. 2.)

The ability to see *one* girl with dog on one side and flowers on the other constitutes true fusion. Both the Kroll and Dahlfeld sets have many good examples. But before the faculty rises to the second grade the patient must be able to fuse pictures with some variation in the distance between them without any prismatic change. I find Knoll's trapeze very useful in teaching this faculty.

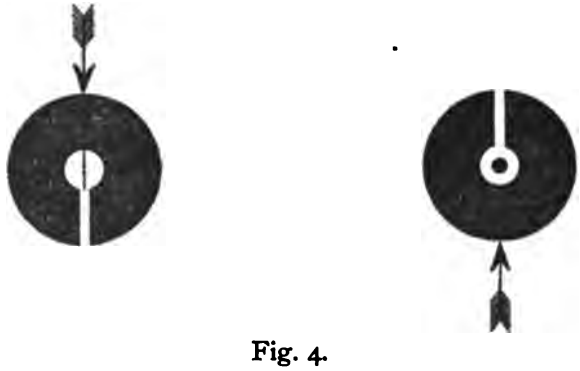


Fig. 4.

Javal, Series I, 5½ cm.

This card is in two pieces, sliding on horizontal strips to vary distance between figures. After bringing the two men on the same trapeze, I change the distance between the pictures, directing the patient to keep them on the same trapeze. When this shows some amplitude, Javal's series I is useful; with these cards the dots vary from 2½ to 11 cm. apart.

20-30 mm. amplitude I regard fusion of second grade. True perspective is readily shown by using Dahlfeld's decentered circles, of which he furnishes a great quantity.

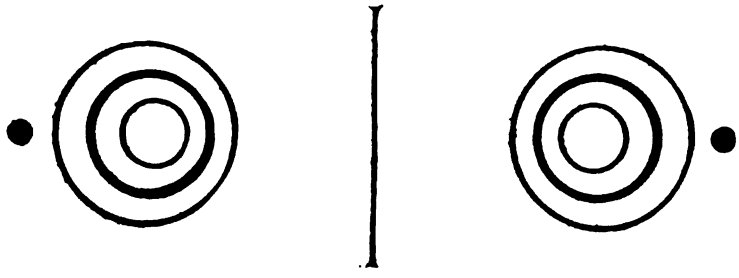


Fig. 5.

Dahlfeld XXVII.

The conical effect here seen depends upon the principle that the black circles, being nearer together than the large circles, require more convergence to fuse, and one sees the small end of the cone nearer because we invariably associate relative nearness with increased convergence.

Another good test is Javal's weather-vane.

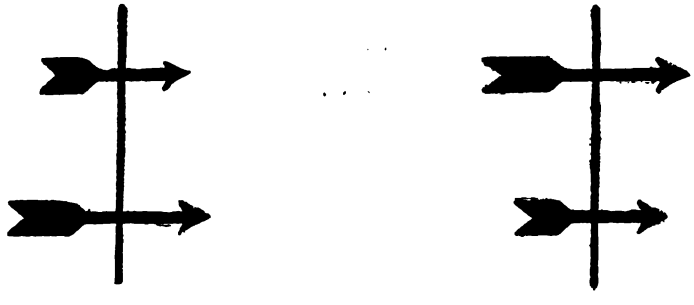


Fig. 6.

The lower arrow seems to point toward the observer because the points are 60 mm. apart, the posts 63 mm. and the tails 67 mm. The reverse being true of the upper arrow.

Many patients possess binocular vision of the second and third grade; that is, are able to appreciate perspective and can fuse pictures at varying widths so long as the objects are *large,* but are unable to combine small objects. This is demonstrated by Javal's series K, in which the types are regularly reduced in size. Although the small characters, being the same distance apart as the large ones, require the same amount of convergence, the image seen by one eye may be suppressed when looking at ordinary type.

If fusion is weak, or undeveloped, one's first duty should be to re-establish it. But as a preliminary a cycloplegic should be used and glasses prescribed, correcting as much of the ametropia as the patient will accept. The eye having the greater refractive error is the one usually suppressed. In order to habituate the patient to using this eye (to relieve the amblyopia exanopsia) it is well at intervals to use a cycloplegic in the *fixing eye.*

*Dr. Richard H. Derby orders the patient to use a close-fitting shield over the fixing eye for an hour or two every day.

Good work, both in diagnosis and treatment, may be done with the ordinary stereoscope: the American model devised by Dr. Oliver Wendell Holmes. This is a modification of the Brewster stereoscope and consists of a pair of plus 5.00, with prisms 8 degrees base-out. But with any considerable heterophoria this form is inadequate. The requisites of a good stereoscope are, first, an adjusting pupillary distance; second, habitual use of plus 10. lenses, and a means of using stronger in one or both eyes; third, a clip for inserting cylinders to correct astigmia; fourth, the opportunity of varying the prisms at will. Noticing that my phoro-optometer furnished most of the necessary movements,

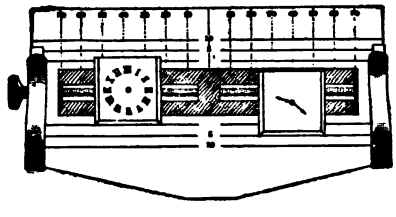


Fig. 7.

I have devised an attachment for holding the pictures, with movable object carriers. The lens holders, with three clips, allow the use of any sphere, cylinder or prisms before each eye. The pupillary distance is quickly and smoothly adjusted and measurement noted on the scale. The stereoscopic attachment can be applied, as you see, without either patient or physician changing his seat. The sliding tube is copied from Dr. Derby's model. The arrangement of the slides for carrying the half pictures, and the adjustment of the height of the same, is original.

*Med. Record, March 29, 1902.

The ordinary pictures may be used in the clips, which are spacious enough to hold six or more cards at once. The mm. scale on the back of the picture-holder is modified from Dr. Derby's model. This enables one to keep an exact record of the amplitude acquired. The use of plus 10. lenses greatly facilitates the prismatic calculations, as each mm. of decentration of the lenses and each mm. displacement of the object equals one prism dioptre. Hyperphoria is a serious obstacle to fusion, therefore it is advisable to arrange prisms in the clips, or raise or lower the pictures to relieve this. The first indication is to make fusion easy. This accomplished the half pictures may be varied as fast as there appears any amphlitude. The rapid development of adduction which is so often obtained by this so-called "gymnastics" strongly suggests that the gain is not a muscle hypertrophy, but an increase in innervation, either in the responsiveness of the end organ in the muscle, or the convergence centre, or both. In the educational treatment of Tabes the incoordination is overcome by teaching the patient to gauge his motor impulses by the eye in lieu of the normal sensory control. Repeated artificial contractions of the internal rectus (the ciliary remaining relaxed) establishes a *habit* of increased action, so that it no longer *lags* when the impulse to converge and accommodate is felt. The co-ordinating centre may also be taught to better appreciate the advantages

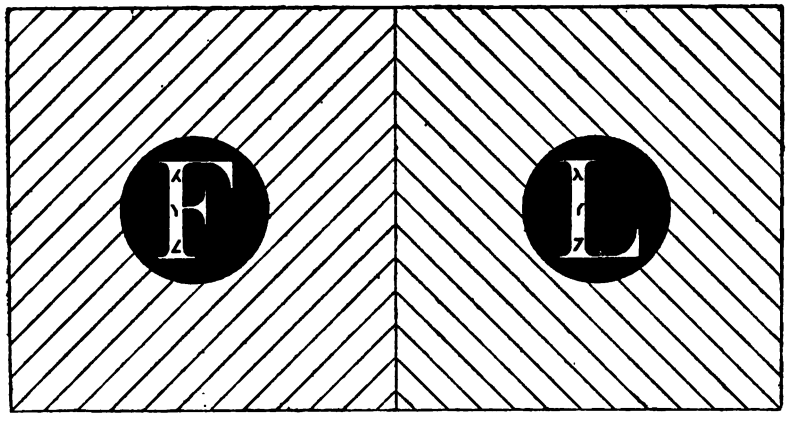


Fig. 8.

of binocular perspective. This is no special pleading, but is analogous to other sensations. The pianist makes his fingers educate his brain that the brain may do better work with the fingers. Tasks consciously performed are in time relegated to sub-conscious control. If this in-

terpretation of muscle gymnastics be accepted, it is evident that the first indication is to teach the patient the fascination of true binocular fusion. Just as in the ordinary prism exercises, with the eyes fixed on a distant point, the aversion to diplopia is an incentive to increased muscle action, so here the *fused* image becomes an *anchor*. With the eyes fastened on a fused image, made up of half pictures, one strongly resists any impulse which tends to pull it to pieces. The decentering of plus 10. lenses is a subtle means of insinuating such an influence, and if still greater effect is needed than this and the prisms which can be fused at first glance, the Cretes prisms may be gradually increased to 30°. 65° of prism may be thus exhibited. The approximation of the half pictures gives 30° more. Total, 95°.

The difference in the *holding* power of different pictures is evidence of the psychic factor above referred to. Figures which become disjointed when fusion is lost are especially good, and if letters are used I find red much better than black. For routine work I have adopted the L and F of Javal, the fusion of which makes E. (Fig. 8.)

It is easily demonstrated that most patients will overcome much more

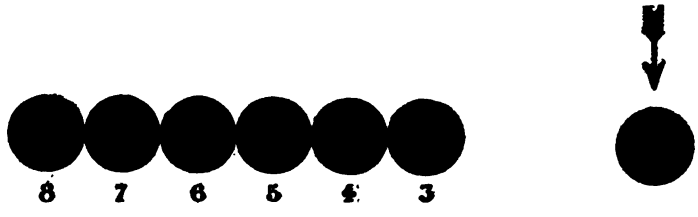


Fig. 9.

prismatic effect exhibited in this way than by changing prisms successively. To relieve exophoria it is necessary to incite and make habitual a greater degree of convergence with a given amount of accommodation. With the eyes fixed on a distant point of light, it is assumed that the accommodation is zero, but this is difficult to verify. When the emmetropic eye, looking through plus 10., sees clearly small characters at the focal distance, viz., 10 cm., we have absolute proof that the accommodation is relaxed. As a result of this, unless it be a case of marked esophoria, the eyes show a tendency toward parallelism when first looking through O. U. plus 10. in the stereoscope. Javal has devised a card, consisting of a series of dots, one cm. between centres, ranging from 3 to 8 cm. from a *single* dot, over *which* is an arrow, (Fig. 9.)

The number of the spot over which the arrow is seen shows which

spot has been fused with the arrow spot, and the distance between them shows the *tendency* of the patient's eyes; his easiest fusion distance.

Two spots are fused into one only when the images fall on corresponding points, and if seen clearly these spots must be the maculæ.

There are two ways in which this may be accomplished:

First, by cross-focussing; that is, by extreme convergence the *right* eye is directed to the *left* spot, and the *left* eye to the *right* spot.

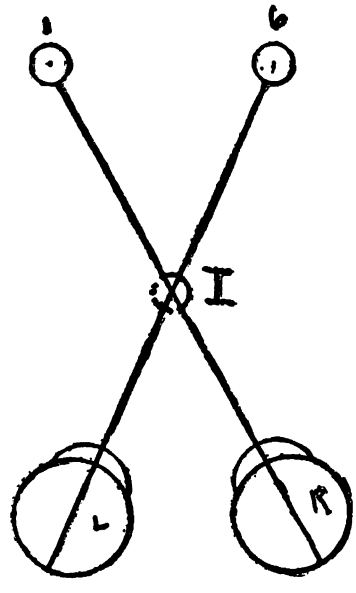


Fig. 10.

Fig. 10 R. and L. = right and left eyes P. D. 60 mm.
1 and 6 = spots separated 60 mm.
I = fused image midway between the plane of the spots and the eyes.

As this would necessitate convergence for each eye of 60 prism dioptres, or 30° as shown by reflection on perimeter it can never occur with plus 10. lenses, except in marked strabismus.

The usual method is the projection of the fused image beyond the plane of the objects.

If the separation of dots equals the P. D. axes are parallel, and the fused image, like the monocular, is at infinity. (Fig. 11.)

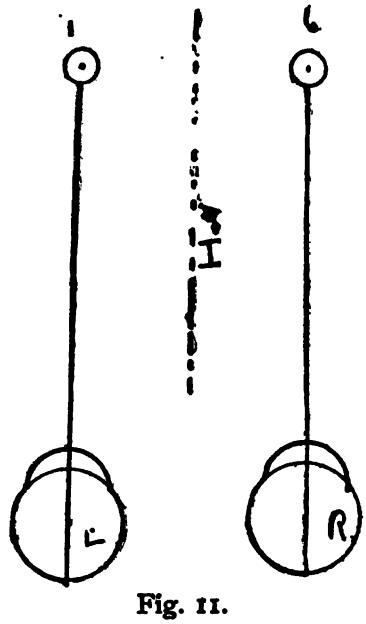
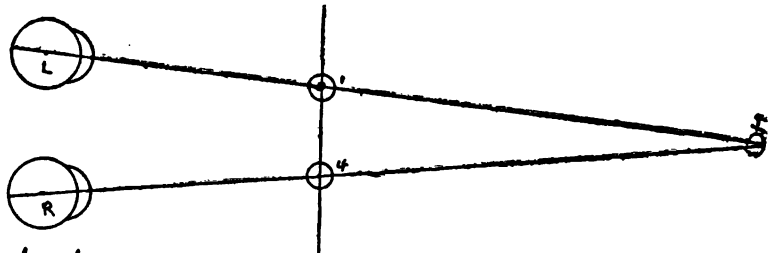


Fig. 11.

Fig. 11 R. and L. = right and left eyes P. D. 60 mm.
1 and 6 = objects separated 60 mm.
I = direction of fused image.

If objects are wider than P. D. axes must diverge, and the image would be projected to infinity.

If spots are nearer together than P. D. the eyes converge upon them, fusing at a *finite* distance beyond the plane of the objects. (Fig. 12.)



Note: These figures are drawn to scale 1/2

Fig. 12.

Dahlfeld and Kroll pictures are 60 mm. between corresponding points, therefore if we are to make fusion easy patient must see the arrow over 6. (Fig. 9.)

With o. u. plus 10. in stereoscope, properly centered for the P. D., let us suppose patient sees the arrow over 5. Then as each mm. deviation equals 1° of prism, o. u. prism 5° base-out is required to bring arrow over 6.

If seen over 4, o. u. prism, 10° base-out is needed.

Practically some variation from these prisms will be found necessary, as the *tendency* of the visual axes is not constant.

In the treatment of exophoria it is necessary to bring about a greater convergence. Therefore, after having produced fusion at 60 mm., the indication is to increase strength of prism until heteronomous diplopia is produced. Or diagrams like Javal's series I, with decreasing distance between the half pictures, may be successively shown. This requires more and more convergence. The eyes should remain open and each picture quickly slipped in front of the one being fused. If the slide carriers are being used the pictures should be slowly brought nearer and nearer together until heteronomous diplopia results. The mm. scale shows the amplitude of fusion.

I frequently direct patients to use the ordinary stereoscope at home, having them bring a lot of pictures which I mark with two dots : on one and . one on the other, at corresponding points, so that if seen binocularly three dots will be seen in line ⁝ A vertical line may be drawn on one | and a horizontal — line on another, making a cross + when fused. At the office I invariably follow the stereoscopic exercise with the ordinary fusing of successive prisms while fixing a distant light. I believe, with Dr. Norton, it is inadvisable with most of one's patients to give them boxes of loose prisms for home use; they are seldom used intelligently and often lead to the formation of wrong habits. I have recently adopted a method suggested to me by John H. Payne of providing a patient with a pair of spectacles with o. u. pr. 3° to 7°, base-out, to be used by him for two minutes while fixing a distant light, alternating raising and lowering the glasses every ten seconds. Dr. F. Park Lewis's method (Ophthalmic Record, February, 1902) of giving patients prisms, base-out, to wear all the time for days or weeks has not proved very satisfactory in my hands. But no home training should be allowed until we are certain that diplopia will never be overcome by divergence, with suppression of one image.

A few cases are here cited as illustrative of some of the varying conditions under which stereoscopy is indicated:

Case One.—Is to illustrate the statement that the diagnosis of hetero-

phoria is incomplete until the *grade* of binocular vision is demonstrated.

Miss ——, age twenty-two; stenographer; June 8, 1901; feels eyes turn; no headache or pain in eyes, but an indescribable, confused feeling; wearing o. u. + .50 ⊂ + .25c 90° ⊂ pr. 3°, base-out; these were prescribed one year ago and relieved the symptoms for awhile.

Examination: R. + .50 ⊂ + .25c 105°. Vision = 1.
L. + .25 ⊂ + .37c 75°. " " 1.

Cycloplegia, scopolamin, brought out no difference. There was esophoria 3° d. 10 near; no bar reading; occasional converg. strabis. *right,* shown by covering R. and its failure to fix on uncovering until left eye was covered. Had binocular vision, first grade only, simultaneous macular perception; that is, could bring together discrete pictures. As both patient and myself were going away for the summer, I ordered—

R. + .50 ⊂ .25 cyl 105° ⊂ pr. 3°, base-out.
L. + .25 ⊂ .37 cyl. 75°.

For constant use, with instructions to come back in the fall when she returned to town.

October 15—Reports has worn glasses constantly, but right eye feels strained; no trouble with left; right fixation somewhat better; esophoria variable; omit prism from right—

℞. R. + .50 ⊂ + .25 cyl. 105°.

Directed patient to attempt bar reading, with pencil held two to four inches from face; commence daily stereoscopic training.

October 19, 4 days—Bar reading possible with pencil four inches from face; not seen again until November 30.

November 30—Can read behind pencil held eight inches from face; stereoscope fusion, with 20 mm. amplitude; ordered home use of Holmes's stereoscope, with pictures, marked to secure fusion.

December 7—Asthenopic symptoms relieved; bar reading good; fusion amplitude same, viz., 20 mm.

January 17, 1902—R. fixation good; amplitude fusion 50 mm., with Knoll's trapeze.

February 10—Orthophoria distance; esoph. 6° near.

March 1—With Maddox rod, exoph. 9°.

May 2—Very comfortable until recently; been using eyes very hard evenings and feel little tired; orthophoria D. cover test and phorometer. Esophoria 6° near with phorometer; cover, 3°; fuse, 15°, base-out; amplitude, Javal series I 15 mm. Javal series K all. This

case has been a very instructive one to me, as I am now convinced that the esophoria has never been a disturbing element. Since the establishment of binocular vision there has been revealed a marked insufficiency of convergence, which can undoubtedly be relieved by training.

Case Two.—Miss ——, age seventeen; student; October 18, 1901; frontal and suboccipital headache—

R. + .50 cyl. 75°. Vision = 1.
L. + .50 ⊂ + .25 cyl. 105°. " " 1.

Scopolamine—

R. + 1.00 ⊂ + .25 cyl. 100°.
L. + .75 ⊂ + .75 cyl. 80°.

Exoph. 18° D., 22° near.

Each eye remains diverged on uncovering until the other is covered; can bring together discrete pictures occasionally.

November 7—After two stereoscopic treatments can bring together discrete pictures easily.

℞. Stereoscope for home use, with marked pictures, to ensure fusion; glasses *not* ordered.

December 21—(After eleven visits with stereoscopic training and fusing prisms) asthenopic symptoms gone; can fuse 45° prism, base-out; exophor. remains the same. Not seen again until February 3, 1902; no return of asthenopia; can fuse 43°, base-out; exophor. same as at first, viz., 18° to 20°.

March 3, 1902—Writes: "No discomfort using eyes as much as wants to." *After* each treatment exophor. was temporarily reduced 3 to 7°.

June 6—Writes: "Perfectly comfortable."

Query: Would the refractive correction alone have relieved symptoms? In such a case, when vision is good, is there any objection to correcting the heterophoria and omitting the use of glasses? This is reversing the classified routine of first consigning the patient to glasses and not treating the heterophoria if glasses relieve.

Is it not logical to assume that both defects caused reflex symptoms, but one cured, the patient could take care of the other?

Case Three.—March 7, 1902; Mr. ——, age forty-nine.

Wearing for distance—

R. + 1.25 ⊂ + .50ᶜ 90°.
L. + 2.00 ⊂ + 3.75ᶜ 65°.

Has changed glasses several times during a year; present glasses

annoy by blurring distant objects; hard to recognize friends on street, but weaker glasses cause return of headache.

Refraction: R. + .50 ⊂ + .62c 85°. L. + 1.25 ⊂ + 3.50c 75°. V. = 1. presbyopia + 2.00.

Orthophoria dist. and exoph. 2° near.

Rx. Scopol. 1/8% gtt. ij. each half hour for two hours caused mydriasis, but not cycloplegia, followed with Atropine gr. iv. ad. ℥ij.; no cycloplegia, but considerable dryness of mouth; gave up attempt and ordered above glasses.

April 2—Comfortable for two weeks, but now has headache, frontal and pain through eyes; sometimes lasts all night.

Ext. recti o. u. 12°.

Int. recti R. 26°.

Int. recti L. ? diplopia not recognized.

Has perspective stereoscopic vision, but only slight amplitude; apt to lose left image; can fuse 15°, base-out.

April 16—Has had six office treatments; perfectly comfortable; amplitude series I Javal 20 mm.; can fuse 25°, base-out; recti o. u. int. 22°; ext., 8°.

June 10—No return of symptoms.

Case Four.—December 16, 1901; Mrs. ——, age thirty-seven; wearing o. u. — .50c 180²; "eyes feel stiff and dry;" "confused feeling"—

Rx. R. + .25 ⊂ .50c 90° V. = .8 +.

L. + .25 ⊂ .25c 90° V. = .1.

Exoph. 2° D and near; stereoscopic vision normal.

December 30—Eyes feel better, but still has indescribable confused feeling in head; can fuse 17°, base-out; recti o. u. int. 16°; ext., 9°.

January 17, 1902—Has had eight office treatments; perfectly comfortable; wears glasses part of the time only; previously wore glasses constantly; recti o. u. int. 30°; ext., 7°; can fuse 48°, base-out.

February 7—Has had seven office treatments; confused feeling gone; wears glasses only when very tired for near work; can fuse 85°, base-out. Not seen again until March 22; no return of symptoms; glasses seldom worn; can fuse 60°, base-out.

June 14—No unpleasant symptoms.

The Westminster, Copley Square, June, 1902.

DISCUSSION.

E. J. Bissell, M. D.: From the time when Javal first made practical application of the stereoscope in the diagnosis and treatment of mus-

cular deviations, ophthalmologists have been slow to appreciate its value; even today the stereoscope will not be found in many oculists' offices, and men are still trying to overcome incipient strabismus by daily covering up the fixing eye or keeping it under the influence of Atropine, hoping thereby to bring the deviating eye—which usually is the one with less visual acuity—into muscular harmony with its fellow.

Such a course shows a lack of appreciation of the fact that an imperfect or an unacquired power to fuse images is usually a more potent factor in muscular deviations than anisometropia. Under intelligent training of the fusing power, results are being secured which are of far greater value to many patients than those which could be obtained by surgical measures. Even after tenotomy or advancement, orthoptic treatment should be used if we hope to secure the greatest possible benefit for our strabismus cases.

The author of this paper has presented a most comprehensive and coherent plan, and I have nothing to say in adverse criticism of it. The merits of this paper cannot be fully appreciated by merely hearing it read. It will well repay every member of this society to give it careful study when it is published in our Transactions.

There are three points in the paper which my own experience corroborates: First, in the use of Kroll's test cards in cases with very poor fusion power and amblyopia in one eye, "the larger picture should correspond with the unused eye;" second, that some cases which quite easily fuse large objects, but where binocular vision is not habitual in reading, require long and persistent training; third, "the fascination of true binocular fusion." It is just in this connection that Kroll's cards are of especial value for children. The different pictures excite the child's interest, and, psychologically, interest is going to be of great aid in bringing about the results hoped for. I believe that it is because of this, largely, that better results are often secured by first rendering the fusion of objects easy, and then adding prisms to bring greater demands upon the muscles to maintain this fusion than by the usual routine of so-called exercise with prisms. In this latter way we may even diminish the incentive to fusion.

Dr. W. W. Wells, M. D.: I am sorry that my paper does not excite more discussion; the criticism that Dr. Bissell makes is only a verbal one, the substitution of prism *dioptre* instead of prism *degree,* and I accept it as the more exact statement. It is not claimed that the tests are of scientific accuracy, but they are sufficiently so to be of practical use, the main point being to note the patient's progress from day to day.

FIFTY CATARACT EXTRACTIONS.

BY CHAS. H. HELFRICH, M. D.,

New York.

THIS report of fifty cataract extractions embraces all the operations we have made up to the present time, with the exception of six cases, which will be accounted for presently. The percentage of successes obtained, 98, compares very favorably with other reports of like character. Of the fifty cases, vision equal to $^{20}/_{20}$ was obtained in 9 cases, $^{20}/_{30}$ in 12 cases, $^{20}/_{40}$ in 9 cases, $^{20}/_{50}$ in 5 cases, $^{20}/_{70}$ in 4 cases, $^{20}/_{100}$ in 5 cases, $^{20}/_{200}$ in 5 cases, and one failure from irido-choroiditis.

Thirty-two cases were made with a preliminary iridectomy and the remaining eighteen were simple extractions. A comparison of the results obtained by the two methods may be interesting, even though it is not conclusive. Leaving out the one failure, an extraction with iridectomy, which was in no sense due to the *kind* of operation, we have:

	Combined Extraction.	Simple.
$^{20}/_{20}$	4	5
$^{20}/_{30}$	8	4
$^{20}/_{40}$	7	2
$^{20}/_{50}$	3	2
$^{20}/_{70}$	4	0
$^{20}/_{100}$	3	2
$^{20}/_{200}$	2	3
	31	18

The six cases not included in this report consisted of—

First. Two cases of simple extraction in the same patient, a man with double atrophy of the optic nerve, the operation only being undertaken in the hope that he would be able to see large objects. From an operative standpoint it was a great success; he recovered rapidly with circular mobile pupils in each instance and vision of fingers at ten feet. He was an illiterate foreigner, so could only be tested with fingers, and his refraction worked out by retinoscopy and the ophthalmometer.

Second. A combined operation upon a woman with a large, dense macula of the cornea and a degenerated lens. It was purely experimental, but it healed kindly, and she was able to see large objects.

Third. Three cases of combined extraction where unfortunately no record of vision could be found in the clinic records. The house records show they were dismissed in respectively 13, 18 and 24 days, which would indicate they made good recoveries. Letters addressed to them recently were returned marked "not found." From personal recollections we are sure they were successful, but owing to the lack of the important data it was necessary to omit them.

The first fact no doubt to strike the observer is the preponderance of the extraction with preliminary iridectomy over the so-called simple operation without iridectomy. Our earlier operations with several exceptions were all made after that fashion, because we were impressed during our six years' service (1887-1893) as resident surgeon at the N. Y. Ophthalmic Hospital (the time the simple operation was resurrected by Dr. Knapp and adopted by the late Dr. Geo. S. Norton) with the risk of prolapse of the iris attending the latest method. It seemed too great a risk for one to assume at the threshold of his career as an operator when success meant reputation. With a little experience came a desire to try the simple extraction, and it was employed for several years with as good success as we could hope for, two cases of prolapse out of twenty, but only to return to the safer method with preliminary iridectomy. We notice with gratification the return of others to the method "for your grandfather," as it has been termed.

Our objections to the simple extraction are briefly prolapse of the iris, which always detracts from the vision obtained, even though it be cut away at the time. If not cut away, my observations, while resident at the Ophthalmic, were that the vision obtained at first deteriorated as the years went by, caused by the constant dragging upon the iris. An iridectomy will always prevent this, and to meet the objections of those opposed to two operations it may be made at the time of the extraction, as is done in England and on the Continent. Next, and not secondary in importance, is the added difficulty to such delicate procedures, as extractions with the scoop, when unfortunately the lens falls back into the vitreous or vitreous presents at the conclusion of the incision. As this happened to us in five out of our fifty-six cases, it is a point worth considering, especially by beginners. Fortunately in each of our cases an iridectomy had been made, rendering the procedure easy and the loss of vitreous during its accomplishment slight. In myopic cases, and in others where fluid vitreous is suspected, a preliminary iridectomy may be of decided advantage if such complications arise.

As to our operative methods, we have nothing original to present. Where preliminary iridectomy was made, a very small keratome was employed to insure a small incision, and the removal of only a narrow strip of iris. A narrow colobma is all that is required to prevent prolapse of the iris into the wound, and is less unsightly. This calamity is always due to the separation of the lips of the incision, allowing the aqueous to gush out and carry the iris with it. The iridectomy is made about a month previous to the extraction.

At the extraction we have uniformly and rigidly carried out the usual antiseptic precautions, and despite the fact that two cases had chronic incurable purulent dacryocystitis of an aggravated type no case happily was lost by infection.

The incision employed in both simple and combined operations is to make the puncture and counter-puncture at the corneo-scleral margin and carrying the incision upward until the knife emerges at the corneo-scleral margin above without making a conjunctival flap.

With reference to the capsulotomy, it is usually made crucial in shape, as our experience does not coincide with the view that discissions are practically always necessary, or that peripheral capsulotomy presents any decided advantages over the crucial. After the capsulotomy the speculum is always removed, as assistant holding down the lower lid with his finger, while the upper lid is made to separate the lips of the incision by pressing it above.

The usual manipulation in delivering the lens is always followed.

While it is advisable to remove as much of the cortical substance as possible, we are not in sympathy with those operators whose strenuous efforts to get out every vestige of it are frequently followed by loss of vitreous. It is no uncommon thing to see cortical matter absorbed in the months following the extraction, even to the point of rendering a discission unnecessary. Special care, however, is given to the *toilette* of the wound, though we have never resorted to syringing.

The dressing employed universally until of late was the roller bandage. In leaving it for the moist cotton pad, held in place by strips of adhesive plaster, we have only kind words to say of it.

Simple closure of the lids with gold beater's skin plaster was employed by several operators during my term as resident at the hospital. Two cases of inversion of the lower lid caused by it, with subsequent infection of the eye, was enough to condemn it.

The after-treatment consists of rest in bed in a moderately lighted room for three days, unless some trouble appears, and the use of a

liquid diet during this period. A solution of Atropine is usually instilled the second day and continued as often thereafter as is necessary to keep the pupil dilated. We believe Atropine has a salutary effect on warding off inflammations, consequently we do not believe in attempting to get on without it.

If inflammation ensues, ice locally and *Rhus tox.* ·1 and *Hepar* 3x, either singly or in alteration, are ordered. Cases 9 and 42 are additional wreaths to place upon the monument to their efficacy in these conditions. In several cases where we were called in consultation, presenting the dreaded symptoms haziness along the line of the incision, the adherent string of pus, the cloudy aqueous, etc., indicative of suppuration of the cornea, these remedies were prescribed and the cases saved.

The average length of time the fifty patients remained at the hospital was twenty-two days, the time varying from eleven days to thirty-six. No special effort is made to get them out early, as safety is held paramount to any record breaking.

Secondary operations were made in only 50% of the cases; a few more required them, but they failed to return. With several exceptions, no secondary operations were attempted until six weeks had elapsed, and in some instances not for as many months. It is our opinion that with the other reasons why this simple operation of discission is sometimes followed by grave complication should be included too short an interval between the extraction and the discission. No untoward results have followed any of our discissions, and we attribute it to this precaution. Bearing in mind the probability that much of the opaque material blocking the pupil may become absorbed, there is an additional object to be gained by waiting. Iritomy was performed in two instances, cases 13 and 42. In both instances the pupil was blocked and drawn upwards toward the incision, as the result of inflammation, so that the radial fibres of the iris were put upon the stretch. A new and more central pupil was made in each case, the operations differing somewhat from each other. A keratome was first passed into the anterior chamber at the corneal margin on the nasal side, then slightly withdrawn to allow the aqueous to escape and the iris to come forward, when it was again pushed in and made to incise the iris some little distance from its periphery. Thus two incisions were made, one at the border of the cornea and the other in the iris. De Wecker's scissors-forceps, closed, were then introduced through the corneal incision and allowed to open, when one blade was passed through the iris incision

behind the iris and the other passed in front. In the first case a triangular piece of iris was cut out by making two cuts, one from either end of the primary incision in the iris, which met at a point nearly coincident with the centre of the iris. In the second case only one cut in the iris was made with the scissors-forceps, starting about the middle of the primary iris incision. Both were equally successful; a slight amount of vitreous was lost in each case, but the healing of both cases was without special incident. Considering the nature of both cases, iritis, with hypopion following the extraction, the visual result obtained, $^{20}/_{100}$, was satisfactory. In case 43 several attempts at discission were made, but failed on account of the density of the capsule. Finally an incision was made at the corneal border, scissors introduced into the anterior chamber to cut its attachments to the iris, and the capsule withdrawn with forceps. This case made a very good recovery, but owing to an extensive pre-existing posterior staphyloma the vision was only $^{20}/_{100}$.

Among the cases worthy of being cited is case 15, a case of diabetic cataract, which, contrary to the opinion held of them, recovered promptly in seventeen days. The poor vision obtained, $^{20}/_{100}$, was due to atrophy of the optic nerve consecutive to diabetic retinitis.

Another interesting patient furnished the 32 and 34 extractions. He had congenital posterior polar cataracts, and for a year previous to the operation was obliged to have his pupils dilated artificially in order to see. He made good recoveries with circular mobile pupils, and much to my amazement secured $^{20}/_{20}$ in both instances.

The most happy and unexpected result was obtained in case 39. Nine years previous he had a detachment of the retina, which was cured by putting him upon his back for a number of weeks. The eye remained well until about a year before the extraction. Starting with serous iritis at this time he had one complication after another until the culmination in a cataract. During the progress of the serous iritis a large exudation appeared in the choroid, and following this numerous large and small opacities in the vitreous. At this time it was impossible to see the fundus through the hazy cornea and clouded vitreous. After a long course of treatment he finally improved so that he had vision of $^{20}/_{40}$. Just as we thought everything was well the lens became cloudy, and the cataract progressed so rapidly that in several weeks his vision was reduced to the perception of light. A transient diabetes further complicated matters. We operated with considerable trepidation, but he recovered nicely and obtained vision of $^{20}/_{30}$. Every-

thing depended upon it, as it was his only eye. It is now two years and his vision has not deteriorated.

Case 47 was also surprising, in that despite of an attack of glaucoma, for which iridectomy had to be made, he recovered $^{20}/_{30}$ vision after the extraction, which was complicated by a severe attack of iritis brought on by a blow upon the eye. His other eye is also cataractous, but it has no light perception.

The poor vision, $^{20}/_{200}$, in case 28 is accounted for by a small central pre-existing macula of the cornea.

And now as to case 30, our only failure to obtain vision, because the operation was a success in that the wound healed. The iridectomy and the extraction were performed without special incident, yet an attack of irido-choroiditis destroyed the vision. We are at a loss to account for it unless it was a sympathetic trouble induced by the other eye, which met with an injury in his youth. We have this comforting reflection, however, that this atrophied organ was enucleated before any operative measures were attempted upon the cataractous eye. This same precaution was taken in case No. 21, whose other eye was atrophied from an old injury, and we consider it a very necessary thing to do.

The age of patients varied from 28 to 89; three were over 80; the average equals 65 years.

The right eye was operated upon in 32 cases and the left in 18.

In presenting the summary of our cases we have used a schema of our own, the most important innovation of which is the presentation of the prescription for glasses. This and some other matters for reflection not touched upon in this paper may be of interest to those who love statistics.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.

No.	*Sex. Age. Eye. Health.*	*Condition of Cataract and Existing Eye Complications.*	*Operation and Incidents During Its Performance.*	*Healing Process and Duration of Treatment.*	*Secondary Operation.*	*Vision.*	*Glass Prescribed. Remarks.*
1	Male. Age 48. Right. Good.	Mature. Fluid vitreous.	With prelim. iridect. 32 days previous. Lens fell back into vitreous; removed with scoop.	Normal. 26 days.	Discission. 8 mos. later.	$\frac{20}{70}$	+ 10. D ⊂ + 3.50 D• 180.
2	Female. Age 64. Right. Good.	Mature.	Simple extraction in capsule with loss of vitreous.	Normal. 16 days.	None made.	$\frac{20}{200}$	Glass not recorded.
3	Female. Age 66. Right. Good.	Mature.	With p. irid. 28 days previous.	Normal. 18 days.	Discission. 6 wks. later.	$\frac{20}{50}$	+ 11. D ⊂ + 2.75 D• 180.
4	Male. Age 74. Right. Good.	Mature.	With p. irid. 30 days previous.	Normal. 25 days.	Discission. 8 mos. later.	$\frac{20}{20}$	+ 10. D.
5	Male. Age 71. Left. Good.	Mature.	With p. irid. 27 days previous.	Normal. 27 days.	Discission. 6 wks. later.	$\frac{20}{20}$	+ 11. D ⊂ + .75 D• 90.
6	Female. Age 68. Right. Good.	Mature.	Simple.	Normal. 24 days.	None required.	$\frac{20}{50}$	+ 13. D.
7	Male. Age 62. Right. Good.	Mature.	With p. irid. 29 days previous.	Normal. 18 days.	Discission. 2 mos. later.	$\frac{20}{40}$	+ 10. D ⊂ + 1.50 D• 180.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.—CONTINUED.

No.	*Sex. Age. Eye. Health.*	*Condition of Cataract and Existing Eye Complications.*	*Operation and Incidents During Its Performance.*	*Healing Process and Duration of Treatment.*	*Secondary Operation.*	*Vision.*	*Glass Prescribed. Remarks.*
8	Female. Age 70. Right. Fair.	Mature.	With p. irid. 21 days previous.	Normal. 21 days.	None required.	$\frac{20}{70}$	+ 12. D ⌒ + 1.25 De 60.
9	Female. Age 62. Left. Good.	Mature. Chronic dacryocystitis pur.	With p. irid. 34 days previous.	Irido-cyclitis with hypopion. 34 days.	Discission. 6 mos. later.	$\frac{20}{40}$	+ 8. D ⌒ + 1. De 30.
10	Female. Age 70. Left. Fair.	Mature.	With p. irid. 21 days previous. Nucleus slipped up back of iris; removed with scoop.	Normal. 14 days.	None required.	$\frac{20}{70}$	+ 11. D. Same patient as Case 8.
11	Female. Age 63. Right. Good.	Mature.	With p. irid. 22 days previous.	Normal. 22 days.	None required.	$\frac{20}{30}$	+ 9. D ⌒ + 1.50 De 180.
12	Male. Age 72. Right. Good.	Mature.	With p. irid. 27 days previous.	Normal. 12 days.	Discission. 4 mos. later.	$\frac{20}{50}$	+ 10. D ⌒ + 3. De 180.
13	Female. Age 63. Right. Good.	Mature. Chronic dacryocystitis pur.	With p. irid. 1 year previous at the same time as the other eye.	Iritis with pupil drawn up towards incision. 30 days.	Iritomy, made new central pupil by cutting out triangular flap of iris.	$\frac{20}{100}$	+ 16. D ⌒ + 4. De 135. Same patient as Case 9.
14	Male. Age 65. Left. Good.	Mature.	With p. irid. 17 days previous.	Normal. 13 days.	None required.	$\frac{20}{40}$	+ 8. D ⌒ + 2.75 De 180.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.—CONTINUED.

No.	*Sex. Age. Eye. Health.*	*Condition of Cataract and Existing Eye Complications.*	*Operation and Incidents During Its Performance.*	*Healing Process and Duration of Treatment.*	*Secondary Operation.*	*Vision.*	*Glass Prescribed. Remarks.*
15	**Male. Age 68. Left. Diabetes.**	Immature diabetic, poor light perception.	With p. irid. 4 mos. previons.	Normal. 17 days.	None required.	$\frac{20}{100}$	+ 10. D ⊂ + 2.75 D• 180. Atrophy of optic nerve.
16	**Female, Age 77. Right. Good.**	Mature.	With p. irid. 32 days previous.	Normal. 14 days.	None required.	$\frac{20}{40}$	+ 11. D ⊂ + 1.25 D• 180.
17	**Male. Age 75. Right. Good.**	Mature.	With p. irid. 28 days previous.	Normal. 19 days.	Required discission but did not return.	$\frac{20}{50}$	Glass not recorded.
18	**Female. Age 70. Right. Fair.**	Immature.	With p. irid. 7 mos. previous.	Normal. 25 days.	Discissiou. 1 year later.	$\frac{20}{40}$	+ 12. D ⊂ + 1. D• 180.
19	**Male. Age 74. Left. Poor.**	Mature.	Simple	Normal. 23 days.	None made.	$\frac{20}{100}$	Developed spinal affection and died several months later. Same patient as Case 12.
20	**Male. Age 69. Left. Good.**	Mature.	With p. irid. 33 days previous.	Iritis. 33 days.	None required.	$\frac{20}{50}$	+ 12. D ⊂ + 1.50 D• 180.
21	**Female. Age 70. Right. Good.**	Mature.	With p. irid. 40 days previous.	Normal. 20 days.	None required.	$\frac{20}{40}$	+ 11. D ⊂ 5. D• 30. Previous enucleation of other eye.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.—CONTINUED.

No.	Sex. Age. Eye. Health.	Condition of Cataract and Existing Eye Complications.	Operation and Incidents During Its Performance.	Healing Process and Duration of Treatment.	Secondary Operation.	Vision.	Glass Prescribed. Remarks.
22	Male. Age 58. Right. Good.	Mature.	Simple.	Iritis. 31 days.	None required.	$\frac{20}{20}$	+ 10. D ⌒ + 1. Dº 30.
23	Male. Age 68. Right. Good.	Mature.	Simple.	Normal. 18 days.	Discission. 4 mos. later.	$\frac{20}{20}$	+ 7. D ⌒ + 6. Dº 15.
24	Female. Age 35. Left. Good.	Soft.	Simple.	Prolapse of iris in wound. 23 days.	None made.	$\frac{20}{100}$	+ 10. D.
25	Female. Age 71. Left. Good.	Mature.	Simple.	Slight iritis. 29 days.	Discission. 4 mos. later.	$\frac{20}{50}$	+ 7.50 D ⌒ + 6. Dº 180. Same patient as Case 18.
26	Male. Age 68. Right. Good.	Mature.	With p. irid. 26 days previous.	Normal. 11 days.	Discission. 2 mos. later.	$\frac{20}{100}$	+ 12. D ⌒ + 2. Dº 135.
27	Male. Age 82. Right. Good.	Mature.	With p. irid. 31 days previous.	Normal. 18 days.	Discission. 6 mos. later.	$\frac{20}{20}$	+ 10. D ⌒ + 1.50 Dº 180.
28	Female. Age 70. Left. Good.	Mature. Central macula of cornea.	With p. irid. 28 days previous.	Normal. 24 days.	Discission. 5 wks. later.	$\frac{20}{100}$	+ 4. D.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.—CONTINUED.

No.	*Sex. Age. Eye. Health.*	*Condition of Cataract and Existing Eye Complications.*	*Operation and Incidents During Its Performance.*	*Healing Process and Duration of Treatment.*	*Secondary Operation.*	*Vision.*	*Glass Prescribed. Remarks.*
29	Male. Age 58. Left. Good.	Mature.	Simple.	Normal. 27 days.	None made.	$\frac{20}{20}$	+ 7. D ⊂ 6 D^{e} 15. Same patient as Case 22.
30	Male. Age 58. Left. Fair.	Mature.	With p. irid. 39 days previous.	Irido-choroiditis. 28 days.	None made.	Nil.	Organized opacities in the vitreous. Other eye enucleated previously.
31	Male. Age 60. Right. Good.	Mature.	Simple.	Normal. 24 days.	None required.	$\frac{20}{20}$	+ 11. D ⊂ + 2. D^{e} 180.
32	Male. Age 71. Left. Good.	Post. polar cataract. Immature.	Simple.	Normal. 21 days.	None required.	$\frac{20}{20}$	+ 10. D ⊂ 1.50 D^{e} 150.
33	Female. Age 59. Right. Good.	Mature.	Simple.	Normal. 21 days.	Discission. 4 wks. later.	$\frac{20}{20}$	+ 5. D ⊂ + 2. D^{e} 180.
34	Male. Age 71. Right. Good.	Post. polar. Immature.	Simple.	Normal. 23 days.	None required.	$\frac{20}{20}$	+ 10. D ⊂ + 1. D^{e} 180. Same patient as Case 32.
35	Male. Age 65. Left. Good.	Mature.	With p. irid. 45 days previous,	Iritis. 36 days.	None required,	$\frac{20}{40}$	+ 11. D ⊂ + 2. D^{e} 30.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.—CONTINUED.

No.	*Sex. Age. Eye. Health.*	*Condition of Cataract and Existing Eye Complications.*	*Operation and Incidents During Its Performance.*	*Healing Process and Duration of Treatment.*	*Secondary Operation.*	*Vision.*	*Glass Prescribed. Remarks.*
36	Female. Age 74. Right. Good.	Mature.	Simple.	Normal. 29 days.	Discission. 5 mos. later.	$\frac{20}{20}$	+ 12. D ⊂ + 3. Dᵉ 180.
37	Female. Age 68. Right. Good.	Mature,	Simple.	Normal. 11 days.	Discission. 25 days later.	$\frac{20}{20}$	+ 13. D ⊂ + 1. Dᵉ 165.
38	Female. Age 54. Right. Good.	Mature.	Simple.	Normal. 14 days.	Discission. 3 mos. later.	$\frac{20}{30}$	+ 11. D ⊂ + .75 Dᵉ 90.
39	Male. Age 28. Right. Good.	Soft cataract, result of chronic irido-choroiditis.	With p. irid. 6 wks. previous.	Normal. 20 days.	Discission. 6 wks. later.	$\frac{20}{30}$	+ 10. D. Nine years previous had detachment of retina.
40	Male. Age 41. Right. Good.	Mature.	Simple.	Prolaps of iris. Striped keratitis. Pupil drawn up toward incision. 28 days.	Requires iritomy.	$\frac{20}{200}$	None prescribed.
41	Male. Age 55. Left. Good.	Mature.	Simple.	Slight iritis. 27 days.	None made.	$\frac{20}{40}$	+ 9. D ⊂ + 2. Dᵉ 180.
42	Male. Age 87. Right. Feeble.	Mature.	With p. irid. 2 mos. previous, at which time other eye was operated for glaucoma. Incision small and had to be enlarged.	Normal for 1 wk., then iridio-cyclitis with hypopion, 4 weeks.	Iritomy. New cental pupil made.	$\frac{20}{100}$	+ 14. D ⊂ + 3.50 Dᵉ 165.

SUMMARY OF FIFTY CATARACT EXTRACTIONS.—CONCLUDED.

No.	*Sex. Age. Eye. Health.*	*Condition of Cataract and Existing Eye Complications.*	*Operation and Incidents During Its Performance.*	*Healing Process and Duration of Treatment.*	*Secondary Operation.*	*Vision.*	*Glass Prescribed. Remarks*
43	Female. Age 89. Right. Feeble.	Mature. Myopia with large posterior staphyloma.	Simple.	Slight iritis. 21 days.	Extracted thick, tough capsule with forceps through linear incision.	$\frac{20}{200}$	+ 2.50 D^{e} 180. Opacities in the vitreous.
44	Male. Age 69. Left. Good.	Immature.	With p. irid. 4 mos. previous. Scoop extraction with loss of vitreous.	Normal. 21 days.	Discission. 2 mos. later.	$\frac{20}{70}$	+ 8. D ⊂ + 4. D^{e} 180.
45	Female. Age 54. Right. Good.	Mature.	With p. irid. 23 days previous.	Normal. 17 days.	Discission. 8 wks. later.	$\frac{20}{30}$	+ 10. D ⊂ + 2. D^{e} 60.
46	Female. Age 63. Right. Good.	Mature.	With p. irid. 28 days previous.	Normal. 14 days.	Discission. 8 wks. later.	$\frac{20}{30}$	+ 7. D ⊂ + 4. D^{e} 15.
47	Male. Age 72. Right. Good.	Mature. Previous glaucoma.	With iridect. for glaucoma 30 days previous. Scoop extraction.	Normal for 2 wks., then iritis from below upon the eye. 32 days.	None required.	$\frac{20}{30}$	+ 10. D ⊂ + 1. D^{e} 105. Other eye cataractous without light preception.
48	Male. Age 61. Left. Good.	Mature.	With p. irid. 32 days previous. Scoop extraction.	Normal. 21 days.	None made.	$\frac{20}{30}$	+ 7. D ⊂ + 3. D^{e} 150.
49	Female. Age 62. Right. Good.	Immature.	With p. irid. 33 days previous.	Slight iritis. 22 days.	None made.	$\frac{20}{30}$	+ 9. D.
50	Female. Age 60. Left. Good.	Mature.	With p. irid. 21 days previous.	Normal. 14 days.	None required.	$\frac{20}{20}$	+ 8. D ⊂ + 3.50 D^{e} 180.

DISCUSSION.

J. A. Campbell, M. D.: I will say by way of introduction that I labor under the disadvantage of not having seen the paper until two days ago, and as for the summary mentioned, I have not seen it at all. Dr. Helfrich is certainly to be congratulated on the exceptional success obtained, for 98 per cent. of good results in a series of fifty cataract operations is decidedly better than is shown by the abundant statistics from our best authorities. H. Knapp, in Norris and Oliver, on the eye, states that the collected average of cases shows good results ($^{20}/_{20}$ to $^{20}/_{200}$) in 90 per cent.; moderate, 7 per cent.; failure in 3 per cent. And in all cases, compiled as they occur, good results in 85 per cent.; moderate in 10 per cent.; failure in 5 per cent.

If the six excluded cases are added to the fifty given, the result would still be most excellent, but would reduce the average to about the usual one.

Dr. Helfrich's combined extraction with preliminary iridectomy is worthy of highest praise. While this is an ideal method, I have found it very difficult to induce patients to consent to two operations in my vicinity, where it is seldom done.

The doctor's comparisons between the simple and the combined operations are lucidly correct and fair.

The method is a matter of individual experience and judgment with every one. Each case must be considered by itself. But in the present day, when, by common consent, certain definite facts concerning the operation for cataract are universally accepted, such as antiseptic precautions, the general *toilette* before and after the operation, incision, capsulotomy, removal of the lens and capsular remnants, I am very much inclined to the opinion that success in the operation for cataract is largely a matter of personal technique rather than of method.

After the simple extractions secondary operations are more frequent; indeed, in some reports it is required in over sixty per cent. of the cases. The doctor's position that secondary capsular operations should be deferred until the inflammatory symptoms are in abeyance is surgically correct, though not in accordance with the practice of one of our best known operators.

The question of removal of the speculum before the delivery of the lens must, in my opinion, be decided by our confidence in the skill and reliability of our assistant.

On this point I would add that Dr. Knapp, who has operated upon more cases of cataract, probably, than any other living man in this country I am told, does not wait for the inflammation to subside before performing the secondary operation.

In regard to assistants in the operation my position is that we could not have untrained assistants in this important and delicate operation. I should hesitate to perform the operation if I could get only untrained men for general practice. A skillful assistant is necessary; it

allows the operator's mind to be free to turn its whole attention to his work.

T. M. Stewart, M. D.: Just here seems to be a good place to mention a pair of scissors of peculiar construction that avoids some of the difficulties in getting into a tough capsule. They are very rigid, and yet delicate, but the peculiarity is that they have sharp edges, both front and back. They are sharp pointed and the back edge is also sharp. It makes a kind of spear or arrow point. Then the instrument works in an opposite direction from the ordinary one; that is, when you squeeze the blades they open instead of shutting, as in the ordinary. This avoids the tension on the fingers, which one gets in contracting the muscles. The effort is less and hence the delicacy is greater.

Roy S. Copeland, M. D.: I agree perfectly with Dr. Campbell when he says that it is not the particular system or style of operation that makes the successes, but rather the care in the technique of the operator and the toilet of the operation after it is done. I believe firmly that it is a question of infection rather than a question of traumatism. I fear that many of the eye surgeons are careless in this respect, and instead of taking the strictly aseptic precautions that are used in other branches of surgery, especially in abdominal surgery, they do something very different, and I believe that our failures are due for the most part to infection rather than traumatism.

As we all know, one of the serious accidents of the operation of extraction is the loss of the vitreous. It is decidedly disconcerting to have a gush of vitreous come with the delivery of the lens. I recently had a case where that complication occurred; the eye-ball flattened down like a deflated foot-ball. Some years ago I read in a journal that when this accident occurred it was a good thing to fill the chamber of the eye with normal salt solution. I called for a syringe, and directed through the incision a large quantity of the normal salt solution. The parts were immediately restored to their usual place and form, and the patient made an uninterrupted recovery. It is certainly a procedure that I can recommend to you, and one that I would use again.

G. A. Shepard, M. D.: I saw Dr. Knapp operate two years ago upon two cases in which this accident occurred. He injected the normal salt solution, and one of them had panophthalmia the next day. I believe that the records show that it is not without danger. We should not go away feeling that it is so safe and harmless a procedure.

E. J. Bissel, M. D.: I do not think that we should do an injustice to Dr. Knapp. I have attended his clinics and think that he uses all ordinary precautions in his cases. It seems to me that if we call to our aid a syringe for this purpose that the syringe should be properly prepared and ready for use in the emergency before it has occurred; not, as Dr. Copeland says, send out for the instrument in haste after the accident has happened and there is no time for proper precautions. I keep such a syringe ready and prepared for use.

A. B. Norton, M. D.: As I have read Dr. Helfrich's paper, I should like to make some additional explanation. In regard to holding the lids, it is Dr. Helfrich's practice and also my own to have the assistant hold, not both lids, but the lower lid only; the operator attends to the upper lid. The trouble with a speculum is, I think, that you do not have control enough of the eye at the time; the risk of having the eye squeezed by spasmodic action of the muscles is greater. In regard to the secondary operation, I have made it hundreds of times. In two different cases I had bad results. The first was lost through meeting a very tough membrane; after one needle was in the eye, I called for a second, and that one was not sterilized. The other case occurred last winter, and I have absolutely no reason to advance for it; I do know why it occurred.

As for the loss of the vitreous, I do not regard that as a very serious complication; I have met it again and again. The cases in which there occurs a loss of vitreous, and it is sometimes unavoidable, are the very nervous ones; the patients who are unable to control themselves or their reflexes. The use of the normal salt solution seems to me not a wise procedure; the more you manipulate that eye with the vitreous oozing out, the more damage you are going to do. It is my practice when that accident occurs to immediately close the eye and not touch it again until the normal form has been restored. Nature takes care of such a vacuum by a fluid right from the blood more adapted to the condition than any salt solution can be. It is antiseptic and without the risk of any extraneous matter. I have had no bad results from loss of vitreous.

J. A. Campbell, M. D.: My remarks were not a criticism, but intended as a comment. I do not doubt the benefit of the method, but only doubted whether the results could be universally attained. The doctor says nothing about whether he binds one eye or two. I cannot help but admire the fact that his cases came out so well, and it is a tribute to his skill. At the same time I am free to say that failure does not by any means show lack of skill, for failure frequently depends, not so much upon the operation, method or technique of the operator, as upon the condition of the eye or of the patient. I have just got through with a patient in whose case the operation was as perfect as could be; the pupil is clear, round and black, and the local condition such that one would expect excellent results, and yet the patient's vision is only $^{15}/_{70}$. This lack of success is not at all attributable to the operator, nor to the kind of operation, but only to the internal condition of the patient. The inner eye is defective, and no technique nor choice of method would have given a better result. A certain number of cases in each hundred could not see under any circumstances because the inner eye is defective.

Roy S. Copeland, M. D.: I believe that the loss of the eye after cataract operation is almost invariably due to infection, and the reason that the percentage of cures is less in one series of cases than in another is not due to the choice of method of operating, but entirely to a greater or less degree of care in keeping the parts clean before, during and after the operation. I do not see why we should not have one hun-

dred per cent. of successes so far as suppuration is concerned. The patient should be prepared the night before the operation by the surgical cleanliness of the parts. The eyebrow and surrounding parts should be thoroughly scrubbed and scoured with soap, water and ether, and then a bi-chloride pad kept over the eye until the beginning of the operation. The same procedure should be repeated on the morning of the operation, which should be performed about the middle of the day. Afterwards aseptic dressings are used. In forty cases in our hospital we have had infection in but one case.

This particular man had his vitality lowered by filth; he slept in the loft of a livery stable, where he worked, and he wore four suits of clothing. After we had bathed him and put him in bed he was not in good shape at all for an operation; there was little power to resist infection.

Harold Wilson, M. D.: While I agree with Dr. Copeland that infection plays an important part in diseases of the eye and in the results of ophthalmic operations, I desire to ask how are you going to sterilize an eye; I am not aware that it has ever been done. The sterilization of the eye-ball is difficult, and of the border or edge of the lid it is impossible. The confidence that is begotten by a series of successful operations reminds me of an old practitioner who had not lost a case of diphtheria in many years and had come to regard himself as invincible. Presently, however, he struck a series of fatal cases that made him very diffident on the subject. It takes a long experience to establish a general proposition, and the confidence begotten by a good many years' experience may be ruined in a comparatively short time by a run of bad cases. Many operators believe that the less chemical and mechanical sterilization preceding an operation the less are the chances of the very thing that they are intended to prevent—i. e., infection.

C. J. Swan, M. D.: My experience with sterilization is favorable. I believe in its use before any operation on the eye. The precedure that Dr. Copeland has described is about the same that I use, except that I also think that it is necessary to sterilize the nose. The nasal mucous membrane is a very fertile field for germ growth, and the eye may become infected from that source. The best vehicle for the purpose is permanganate of potash solution, one to two thousand, used as a douch the day before and the day of the operation. The permanganate is a germicide and non-irritating.

J. A. Campbell, M. D.: About thirty years ago, when sterilization was not known and of course not used, I have seen the most beautiful results follow operations that certainly were not sterile in any sense of the word; operations that were full of pus. Let us not be too confident then that our successes are due to our aseptic precautions. It takes often fifteen or twenty minutes of direct contact of germicidal solutions in ordinary use in eye surgery before destruction takes place, and while I am an earnest advocate of cleanliness, I want to know how long we can keep the solutions in actual contact with the tissues; only a very few minutes at the longest. Moreover I doubt very much whether solutions strong enough to do any damage to the germs would not be too

strong for the resistive power of the tissues of the eyes. Take all the precautions possible, but let us understand what we are doing and not place too much confidence in the efficacy of chemical solutions.

G. A. Suffa, M. D.: I have a case to report in this line that was very interesting to me because of the number of operations that were required to effect a cure. The cataract was entirely mature and there was no possible way of knowing what was the condition back of the opacity. The extraction was not unusually difficult and was done by the combined method; the capsule required needling. The vision was $^{20}/_{80}$. I found something attached to the posterior capsule that worked back and forth like a hinge, so as to shut off the sight every time the eye was turned outwards. I let it alone for six months in order to see what absorption would do. It did nothing at all. I then made an incision with keratome below, seized the body, and, drawing it through, cut it off. In three or four days another opacity appeared on the inner side; the pupil was perfectly clear. A day later I found another opacity where the first had been, and I advised him to come in again for another operation. This time I made an incision inward from the former one, and the opaque body floated right into the opening and I pulled it off. Vision is now normal.

A CASE OF CEREBRAL ABSCESS.

BY

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R. H., twenty-four years of age; male; unmarried.

The early history of this case is imperfect, as the patient was first seen by the narrators when on the operating table, and a change of physicians had been made on the previous day.

It was reported by the family and by the patient himself after the operation that the general health had always been good, except for an otorrhœa, which had existed for several years. This discharge was said to cease at times, and then to recur. No particular attention was given to it.

About the middle of January, 1901, he began to suffer from headache, chiefly in the right temporal region. This was very persistent and severe, and prevented sleep. After a time, supposed to be about two weeks, the pain became less and he became drowsy. He answered questions slowly and was difficult to arouse. There is no certainty as to the existence of vomiting, rigors or paralysis. The family are very positive that he was said to have had a nearly normal temperature and a slow pulse.

On February 8 a change of physicians was made, and he was seen by Drs. Robinson and Willis, who found the condition as follows:

Temperature, 99; pulse, 60; respiration, 20; was drowsy, cerebration was slow, could with difficulty answer a question, then became unconscious. The right pupil was dilated and irresponsive to light. A moderate otorrhœa was present.

A consultation was held over the telephone and a diagnosis made of brain abscess. The following day the patient was taken to the Prospect Heights Hospital and prepared for operation.

There was little change in the condition. Stupor was profound; temperature, 99; pulse, 55; Cheyne-Stokes respiration. Right pupil dilated. Ophthalmoscope shows no change in fundus.

Operation.—The tympanum and mastoid were thoroughly exposed. No pus was found, but there was some granulation tissue and the cells were softened. The ossicles were not necrosed and the tegmen

showed no defect. Incision into the soft parts having been extended upward two and one-half inches, a three-quarter inch button was removed from the squama. The dura mater was pale and dry and showed abnormal tension to the finger. There was no bleeding or escape of cerebral fluid when the membranes were cut. The brain substance bulged forward through the opening. A canula was passed into the brain down, forward and inward, after the method of MacEwen. No pus escaped through the canula, but as it was withdrawn a bead of pus followed. An incision was made with the scalpel and the abscess cavity opened at the depth of three-fourths of an inch, allowing the escape of about three ounces of pus and disorganized brain substance. Immediately the pulse became more rapid and soon the pupil diminished in size. The forefinger was inserted and the effort made to bring away all broken down tissue. The cavity was flushed out with normal salt solution and then packed with iodoform gauze.

History Subsequent to Operation.—Eight hours after he is entirely conscious, asked where he was and what has been done to him. Has no knowledge of occurrences of the last two days twenty-four hours after operation. Has slept quietly, waking occasionally and asking for a drink of water. Says he is very hungry. Liquid nourishment is taken readily. Has normal pulse and temperature. Pupils are normal. Dressings are thoroughly saturated with discharge from the wound. When the packing is removed the wound closed down to about one-third of original size; repacked with iodoform gauze.

February 11th—Forty-eight hours after operation. Is fairly comfortable. Mind is clear and has little pain. Wound dressed, repacked with iodoform gauze.

February 12th—Slight mental confusion. Asks if he is in the same place. Still hungry. Takes liquid food with relish. Dressing repeated.

February 14th—Four days after operation. Considerable prolapse of brain tissue. Opening in the dura is drawing together. Much difficulty is experienced in packing the cavity. For this reason, and to obviate such frequent dressing, a rubber drainage tube, three-sixteenths inch calibre, is introduced and stitched to the scalp. Is always ready to eat.

February 16th—Wound is not draining well through the tube. Pressure of brain tissue occludes openings in the tube. A narrow strip of gauze introduced through the tube facilitates drainage.

February 18th—Eight days after operation. Drainage tube is push-

ed nearly out of wound by contraction of tissue and the constant pulsation. Opening in the dura enlarged by a cross section, and band of cicatricial tissue in the wound severed. A larger tube, one-quarter inch calibre, inserted and secured by stitch in the scalp.

February 25th—Granulations from the scalp wound interfere with the dressing. Scalp section is enlarged and tube reinserted. Patient continues to have more than normal appetite. Light diet is substituted for the exclusively liquid diet given thus far.

March 4th—Permitted to sit up for the first time.

March 8th—Did not sleep well, which is unusual. Head feels badly, which he attributes to indigestion.

March 11th—After a good day and night, again has headache. Much depressed mentally.

March 15th—Headache. Very despondent. Has crying spell.

March 18th—Thirty-eighth day after operation. Has been drowsy much of the day. The prolapse of brain tissue has become very pronounced.

March 19th—Pupil of right eye is dilated and does not respond to light. Is sleepy all day. At night pupils are again equal.

March 20th—Right pupil is very much dilated. Very drowsy all day. A small pocket of pus is found in the prolapsed tissue. This is incised without anæsthesia; patient not fully conscious.

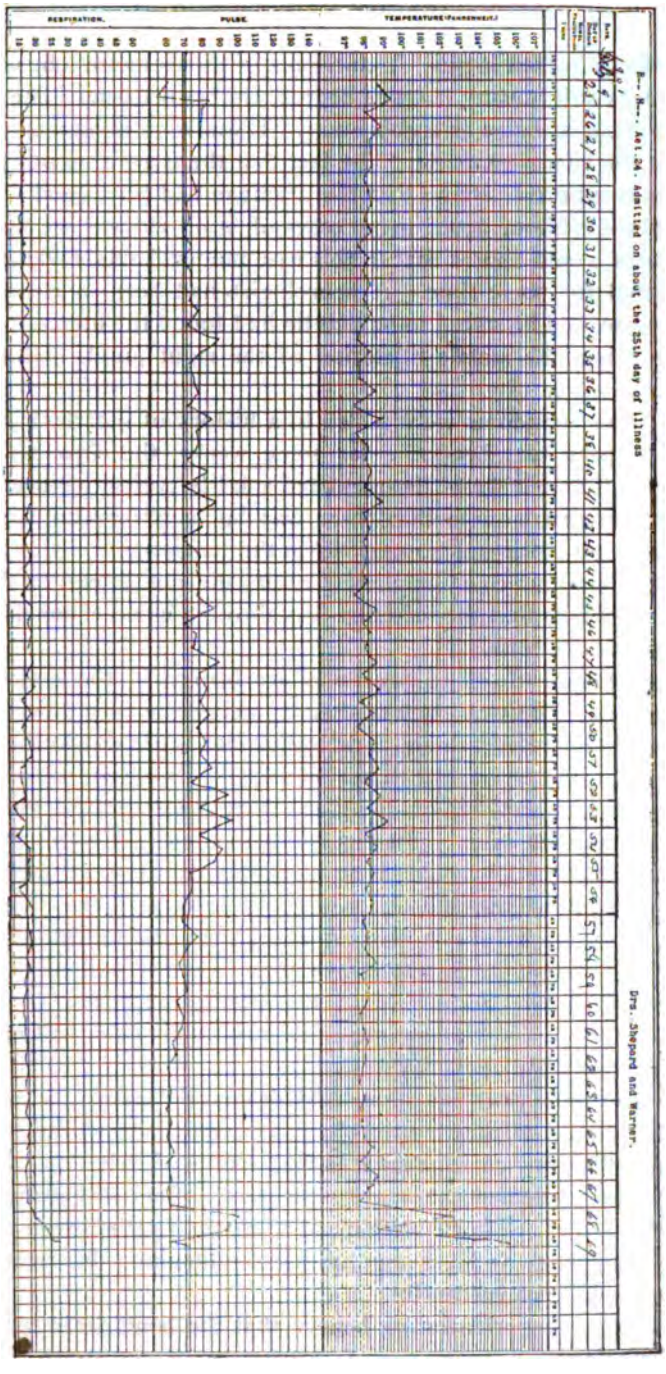
March 22d—Is drowsy. Answers questions slowly. Pupils variable. At times the right is much dilated; at other times they are equal.

March 24th—Is restless. Moaning most of the time. Symptoms of meningitis rapidly developing. Temperature and pulse going up. Convulsive movements of face, hands and legs only partially controlled by frequent hypodermics of morphia. Severe hæmorrhage from the wound.

March 25th—Death on the forty-fifth day after operation. Frequent observations of the pulse, temperature and respiration were taken, which are submitted in chart form.

Autopsy, nine hours after death, by Dr. Herbert C. Allen, pathologist to the Prospect Heights Hospital. Dura thickened, but not adherent.

The tegmen showed no caries and the abscess cavity did not extend to the surface in the region of the tegmen. There was no sign on the posterior surface of the petrous portion of infection through the ductus endolymphaticus. There was extensive, but not violent, meningitis. Beneath the pia were numerous canals of pus and pus sacs, extending over the cerebellum and on the medulla, the base of the brain be-



CEREBRAL ABSCESS.

ing practically bathed in pus. A large part of the temporal lobe was converted into a soft, mushy mass of degenerate brain tissue. The broken down area was as large as a goose egg. There were numerous hæmorrhages in the lateral ventricle. The fact that there were no pus pockets in the brain substance shows that the drainage had been good.

Remarks—Without doubt many cases of brain abscess are not diagnosed, but it would appear that in this case unmistakable evidence must have existed for some time. A neurologist had been in consultation upon the case, and he stated to us that he had found the increasing mental obscuration, the stabile dilatation of the right pupil, and aphasia some days before.

When these symptoms were added to a history of otorrhœa for several years, persistent headache for some weeks, the slow pulse and nearly normal temperature, there existed a fairly typical picture.

It is of interest to note that there was but slight mastoid involvement; also, that there was no necrosis in the tympanum.

Owing to the fact that the abscess cavity did not extend to the tegmen, it is probable that the infection was through blood channels rather than through the bone.

The immediate effects of operation are benign in the majority of cases reported. The vital centres seem to recuperate very quickly from the pressure. Therefore, the high mortality rate is not due to the immediate effects of operation, but rather to delay in its execution, or to our present inefficient methods of dressing. The reports tell us very little of the treatment of cases subsequent to operation. We feel that this is a mistake, and have tried to give a detailed account of our difficulties. From reading MacEwen's cases one would suppose that no care was needed. A drainage tube is inserted and allowed to remain for three weeks. No dressing being done meantime. At the end of this time the patient is well. Some few of the operators confess to having troubles of their own. In our experience the difficulties had only *begun* at the end of the operation.

The rubber tube does not give ideal drainage because the walls of the cavity quickly collapse and occlude its openings, and the constant pulsation of the brain mass cause it to be a source of irritation. Yet, on the other hand, frequent repacking with gauze offers still greater violence to the tissues. Efforts were made to obtain a satisfactory decalcified bone drain, such as MacEwen has used in obtaining his remarkable results, but were not successful.

Owing to our experiences we believe that the bone drain would be more satisfactory.

In several reports mention is made on the increased appetite. We have no information as to the appetite prior to the operation, but during most of the subsequent period it was abnormally increased.

DISCUSSION.

Harold Wilson, M. D.: We are under obligation to the authors of this paper for its clearness and simplicity. Such reports are always valuable contributions to surgery. It would probably have added a little more definiteness to the report if it had been specified upon which side of the head the operation was made. Even the account of the autopsy does not state upon which side the abscess was found. It is unfortunate also that a more extended history of the case previous to the operation was not secured. The fatal termination of the case was apparently due to a secondary infective basilar meningitis. This was probably unavoidable, yet the report is not explicit as to the amount of care taken in evacuating the abscess at the time of operation. It is certainly very important to secure the thorough evacuation of brain abscesses, but it is perhaps no less important to guard against the secondary infection of the contiguous portions of the brain by avoiding any violent disturbance of the abscess walls. It may be that the introduction of the finger to remove cerebral sloughs is sanctioned by good authority, but it seems to me a questionable expedient, and one I should personally hesitate to employ. It is not always wise even to irrigate the abscess cavity for fear of disseminating infective material to remoter portions of the brain.

It is probable that many more cases of cerebral abscess and thrombosis occur in practice than we are aware of. The symptoms are not always explicit, and in any event require for their interpretation a certain special knowledge which the general practitioner—and often the general surgeon—does not possess. This fact has come under my own observation in several instances. A successful diagnosis and the operative verification is therefore always a matter for praise, and although at present the mortality rate is high, in time it will certainly be much reduced. It is to be observed that no two cases are exactly alike. I suppose that in no other condition so limited in area are there more things to be considered. In the absence of decalcified bone I have used a drainage made of a skein of twisted absorbable gut, and it seemed to work satisfactorily. If it is not pushed out it is preferable to an unabsorbable tube or piece of gauze. Neither glass nor rubber tubes are satisfactory in these cases. If we have the bone drainage tubes the twisted gut may serve a useful purpose.

A Doctor: This is a case that requires the finest judgment and surgical skill; the tendency is to allow our judgment to be too much influenced by the results of some particular case that has disappointed us. The first result after a surgeon has lost a case from septic infection of the sinus or brain substance, which he sees might have been avoided by an early operation, is to incline him to the opinion that he will never delay again in an operation upon the mastoid or in any case where there

is any risk of possible infection of the brain. The only thing that will satisfy him in the future is the radical and early operation.

In the way of the radical operation is the fact that it takes a good deal of time, especially if the trouble is deeply seated. You may have to spend an hour or more of time, and then find the trouble of such a nature that you cannot fix it just as you would like to, and have to let it go in an incomplete state. To expose a cerebral or cerebellar tumor requires considerable time and seems like a very prolonged operation when the patient is in a reduced state. One reason for this is that our instruments are not calculated to give us the rapidity of action that is necessary in such a time-consuming operation. Our chisels are of square section, so that the corners of the cutting edge catch in the bone and we can remove only very small lamina at a time. The gouges are also ineffective. Our speed is greatly retarded by the character of our instruments. They are not skillfully adapted to the work that they were intended to do. If you watch a woodcarver at his work, you would soon see that he does nearly all his work with curved tools and seldom with flat or straight instruments. He selects a concave gouge for much of his work. Acting on this idea, I had instruments made that were quite different from those that are obtainable at the surgical shops. Instead of being flat they are slightly curved and have rounded edges, so that they do not catch in the bone; the central portion of the cutting edge meets the bone and the whole force of the blow acts upon it. Quite large pieces come away at each blow. I think that members who are engaged in this kind of work, and have occasion to remove large sections of bone and want to do it rapidly, as it should be done, will appreciate these gouges and find them very useful.

G. A. Shepard, M. D.: I should like to speak upon the first paper, especially to answer Dr. Wilson's criticism. In cleaning out the abscess cavity we took every precaution to do the job thoroughly and get it perfectly clean. The sloughs which clogged the opening of the wound were carefully cleaned away, and the debris washed out by a douch of warm normal salt solution. In regard to the strictures on the use of the finger, I reply that I know of no way in which an abscess cavity in the brain can be so well and safely cleaned out as with the finger. No instrument can begin to compare with it for delicacy, precision and safety. Nothing else can compare with it in delicacy of touch. In washing away the sloughs with sterile normal salt solution no possible damage can be done. All these things were considered beforehand, but in an operation where the mortality is so high we are apt to feel that something has been left undone in spite of all our care. The drainage of these sloughs in brain abscesses is a very difficult part of the technique, especially so if all the dead tissue is not washed away at the time of the operation.

In this case it was impossible for us to know about the history of the difficulty as well as Dr. Warner did in the second case, for we did not know how long the disease had been going on. Probably at the time of the operation the abscess had come pretty close to the sinus. I be-

lieve that it is best to enter the abscess through the antrum wall. The prolapse of brain tissue is more apt to occur if you take off the mastoid roof, yet, all things considered, I prefer it. Surely the operation in cases of brain abscess is the easiest part of it; the serious part is the after-treatment, the drainage, the aseptic dressings, the problem of the prolapse of brain tissue from the constant pulsation of its substance. If any one be present who has had experience in this line, I hope that they will not hesitate to give us the benefit of their experience in regard to some of these problems. The question of drainage is important, and the choice of rubber tube, gauze or decalcified bone needs to be settled.

CEREBRAL ABSCESS OF THE RIGHT TEMPORO-SPHENOIDAL LOBE, COMPLICATED WITH BASILAR MENINGITIS, IN A CASE OF ACUTE OTITIS MEDIA.

BY ALTON G. WARNER, M. D.,

Brooklyn, New York.

OPERATION; death from meningitis on the twenty-fourth day of illness; autopsy, A. B. S., aet. twenty-eight; occupation, literary. Was seen on the third day of illness, suffering from acute otitis media.

History.—Father died three years ago as a result of accident. Mother and one brother living and in good health. Patient's health has always been good. Had ordinary diseases of childhood. Never had any previous trouble with the ears. Had grippe a year ago, and was greatly prostrated, but seemed to have entirely recovered. For three weeks past has been annoyed by persistent rhinitis, which is rendered more troublesome by the presence of enlarged turbinates.

March 1, 1902—Saw the patient for the first time. Is suffering severe pain in the right ear. This has continued more or less for two days, and he now describes it as extreme. Membrani tympani is red, swollen and bulging. There is a profuse thick mucus discharge from the nose. Turbinates are puffy. Ear is so sensitive that he cannot tolerate any manipulation. As soon as assistance could be obtained the membrane is incised under chloroform anæsthesia.

March 2d—Not as much pain, but the ear is very sore and has severe headache; looks sick; temperature, 100; pulse, 70.

March 3d—Had no sleep, constant headache, moderate, thin, sanguino-serous discharge from the ear.

March 4th—Not much pain, but feels wretched. Says he *must* get some sleep. Hypodermic of morphia, one-sixth of a grain, given.

March 5th—Slept all night; no pain in ear or head. Says he feels "just dopy." Temperature, 99.5; pulse, 65.

March 6th—Has severe pain again. Temperature, 101. Very little discharge from the ear. Opening in the membrane nearly closed. A free incision is made under chloroform. Membrani tympani is very thick and spongy.

March 7th—No pain in the ear, but could not sleep. Head feels con-

fused. Some headache, but not severe. Extremely prostrated. Lies very still, but is not asleep. Moderate amount of discharge from ear. Membrani tympani very angry looking and swollen. Temperature, 100; pulse, 68.

March 12th—Condition for three days about the same, except that temperature and pulse become lower, as seen by the chart. Patient has in common with his father and brother an unusually slow pulse in health. Is very quiet, except when spoken to. Takes nourishment fairly well, but prefers not to be bothered. Says the pain in his head is always there. His one cry is for *sleep*. Drs. Fiske, Shepard and Stetson have seen the patient in consultation. This evening thirty grains of Chloral hydrate is given, in ten-grain doses, at intervals of one hour. Pain grows more and more severe. After the last dose is wild and screaming. Morphia, one-fourth grain, is given. Has almost continuous sleep for eighteen hours.

March 15th—Has been very quiet; sleeping at intervals. Has not seemed to have much pain, except occasionally. Says he is never entirely free from pain. Mind is perfectly clear; talks to members of the family on various topics; does not always answer when spoken to, as he says he is trying to get a nap. Condition of the ear does not change materially. There is no tenderness over the mastoid, no sagging of the canal. Membrani tympani is very red and swollen. Moderate amount of discharge. Pupils are equal in size and respond equally to the most delicate tests. Appears to the relatives to be better, except in that he is languid. Takes nourishment fairly well, but has lost some flesh.

March 17th—Nausea and vomiting this morning, followed by pain in the head. Complains that the pain is excruciating; that he will go mad unless relieved. Mental condition perfectly clear. His answers to questions and his own voluntary statements are exact. Pupils are normal. Morphia, one-sixth grain, given. Advise removal to the hospital at once for operation.

March 18th—Taken to St. John's Hospital. Is unconscious. Did not arouse during the transfer. Moans and talks incoherently. Temperature, 104.5; pulse, 120. Prepared for operation.

Seen by Drs. Jordan and Shepard, who concur in advising immediate operation. Ether anæsthesia was administered by Dr. Lloyd. Operation was done by Dr. Jordan and was rapidly and brilliantly executed. The mastoid antrum was opened and found to have congested and somewhat softened walls; did not contain pus or granulations. A slight amount of pus was found in one of the smaller cells, and in

general there was beginning degeneration. The lateral sinus was exposed for an inch an a half and was found normal. The dura in the region of the sinus was perfectly healthy. The tegmen of the antrum and enough of the contiguous bone was removed to expose the cerebral dura. The bone was entirely free from necrosis or erosion. The cerebral dura was somewhat congested and showed marked increase of tension, but did not pulsate. Upon incision of the dura there was an escape of cerebro-spinal fluid. A very slight incision led into an abscess cavity, which lay very superficially directly above the tegmen. About two ounces of pus escaped. The opening was sufficiently enlarged with the scalpel to admit the finger. There was no lining membrane. The tissue about was fairly resistent. The cavity was irrigated with a sterile saline solution until the water turned clear, care being taken to make the pressure as little as possible. Strips of iodoform gauze were then introduced into both the abscess cavity and the cavity in the mastoid. Sterile gauze and a wool pad completed the dressing.

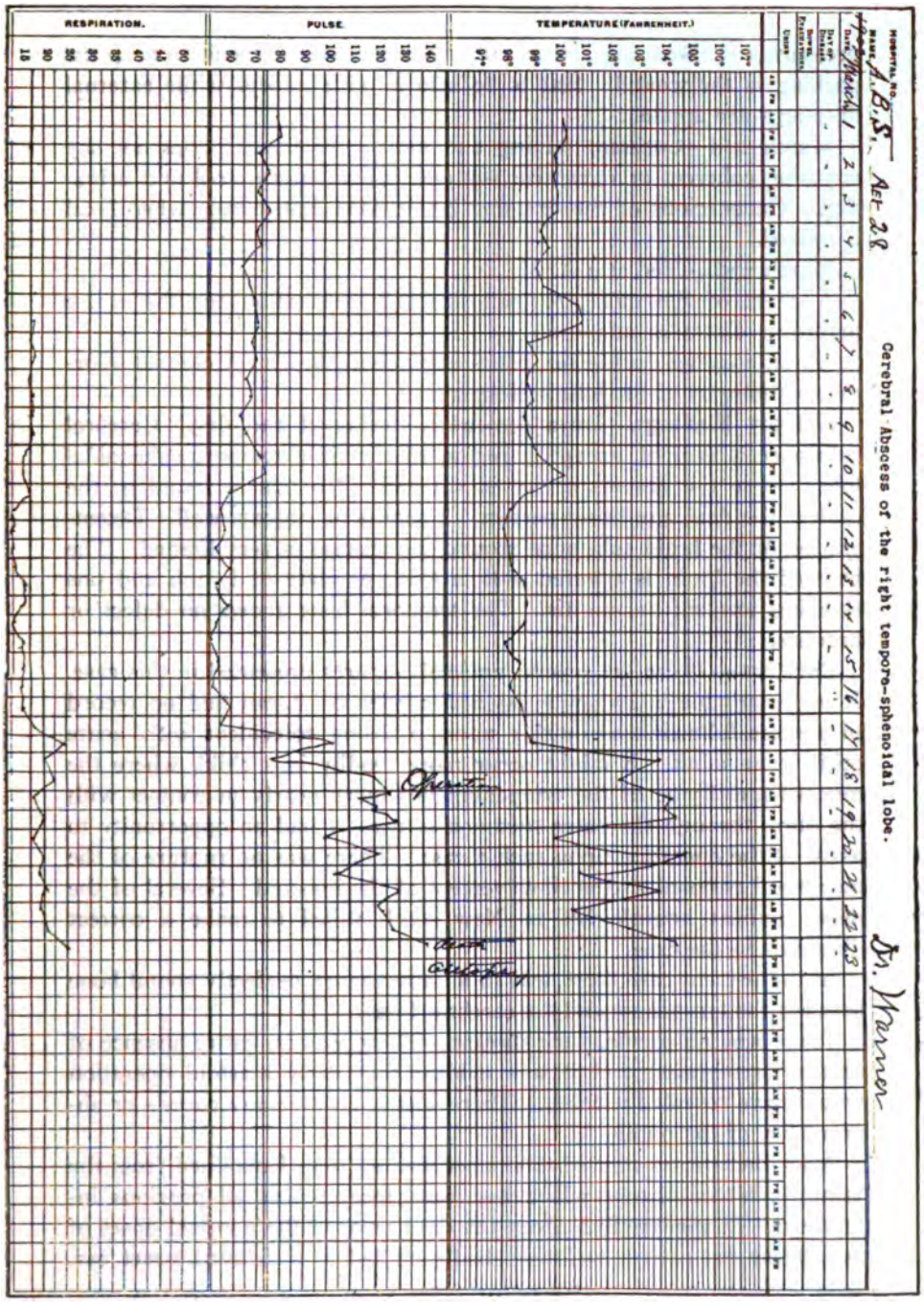
The character of the pulse improved somewhat under the anæsthesia, and especially after the evacuation of the abscess.

During the night subsequent to operation the pulse and temperature remained high; the patient was restless. He said nothing articulate, but moaned considerably.

March 19th—Eighteen hours after operation is restless. Moves both right and left sides alike, constantly trying to find something; sometimes his handkerchief; sometimes an imaginary object. Has been talking in a delirious fashion, but now answers questions slowly. Says he has no pain. Takes nourishment eagerly when offered and asks for more.

March 20th—Is more quiet. Sleeps some at intervals, but not much. Is conscious at times. Talks a great deal in a rambling sort of way. Answers some questions perfectly. Asks if his ear is to be dressed now. Says he has no pain, but is trying to get his head straightened out. Dressings are saturated with the discharge. All dressings are removed and cavities repacked with iodoform gauze. There is a considerable prolapse of brain substance and considerable bleeding from the meningeal vessels. In six hours the dressings are stained with fresh hæmorrhage.

March 21st—Is very restless. Hands in constant motion; is always reaching for something, which he seems to see in front of him. Rubs his nose and forehead till they are sore. Answers with great difficulty. Does not appear to be in pain. Wound dressed as before. The


Cerebral Abscess of the right temporo-sphenoidal lobe.
Dr. Warner
A.B.S.
Aet. 28
Operation
Death
TEMPERATURE (FAHRENHEIT.)
PULSE.
RESPIRATION.

pressure and throbbing are so great that it is very difficult to keep the packing in the wound. Has to be held in with forceps while external dressings are applied.

March 22d—Constant talking and moving of hands; does not say anything coherent or recognize any one. Involuntary stool and urination. Unconscious of the dressing being done, but groans when head is moved.

March 23d—Died at 4 A. M.

A chart of the pulse, temperature and respiration for the entire period of illness is submitted.

An autopsy was made ten hours after death by Dr. Archibald Murray, pathologist of St. John's Hospital.

Autopsy Findings.—Dura somewhat thickened and dry. Cerebral substance is normal, except in region of the right temporo-sphenoidal lobe, where the abscess cavity is situated. No pus is found in the cavity; the drainage being perfect. There is no abscess wall. Degeneration of the brain substance around the abscess is very limited. The base of the brain is covered with a thick exudate of lymph and pus showing virulent meningitis. The temporal bone shows no defect or necrosis.

Remarks.—There are several unusual features presented in this case. It is remarkable in its acuteness and virulence. I can find no record of abscess following so quickly upon, or being coincident with, acute otitis in an adult. It might occur more readily in a child, where the mucous membrane of the tympanum lies more nearly in contact with the dura, through the petro-squamos suture. I had an opportunity to assist at the operation upon such a case. There was no rupture of the membrani tympani and no involvement of the mastoid. Several of the most eminent neurologists in New York failed to make a correct diagnosis in the case.

In the present case there was to all appearance perfectly sound bone between the tympanum and the cerebral fossa.

There was no previous ear disease. There was an entire absence of mastoid symptoms, and it was evident that early mastoid operation would have revealed nothing. There was at no time any paresis or abnormality of the pupils.

After the greater part of this paper was written, I obtained from the family a bit of history which had been forgotten at all previous interviews. It appears that about ten days prior to the nominal onset of the illness the patient had been badly chilled in a delayed street car.

Some hours after he was attacked with a violent headache. This was so intense that he was obliged to go to bed, and he said it was unlike any headache he had ever had before. This passed off in a few hours, but it was remembered that from this time he did not wake in the morning voluntarily, as he had always done, but was hard to arouse. With this information as a starting point, I have formulated a theory of the process of infection, which is plausible, and for want of a better perhaps may serve, viz.: That the otitis dated from the chill. That an inflammation of the dura followed directly, infection being conveyed by minute dehiscences in the bone or by blood channels. This would only occur so rapidly in a case where the inflammation was extremely virulent. The peculiar headache would be caused by an inflammation of the dura.

That pressure enough was kept up by the swollen dura to account for the sleepiness in the morning. That when the inflammatory product had increased enough to make pressure the pain in the ear began. The failure to obtain relief from incision of the drum head was because of already existing inflammation in the dura. Enough gluing together of the membranes occurred to localize the trouble, and abscess resulted. It is a matter of profound regret that the operation was not done earlier. With the whole history and the chart before us, and in the light of our present knowledge, it would appear that the diagnosis was plain some days before. In extenuation, let me say that I had a strong conviction of the existence of abscess of the brain from early in the disease, but I could not bring the family or most of the physicians to share my belief. The symptoms pointing to abscess were discounted. The patient was said to have *always* had a slow pulse and to be slow in answering questions. A member of the family, who was an old school physician, assured them that his symptoms were due to grippe, and the peculiarities were matters of temperament. Moreover, it seemed that a little delay would not add materially to the risk to the patient, and would make the diagnosis more positive. It seems hardly within the bounds of possibility that there need be haste in operating for abscess within seventeen days from a primary acute otitis. On the seventeenth day there seemed to be every prospect of operating with success, and operation was determined upon for the next day. Unfortunately during the night the violent attack of meningitis set in, making operation a forlorn hope.

A word as to the method of operating. Exposing the dura by removing the tegmen has an advantage over that of removing a button

from the squama, in that it is nearer to the usual site of the abscess and that the drainage is better.

Many points of contrast could be cited between this and the preceding case, but your patience is already overtaxed. Every case presents some different feature, and all are of burning interest to the man who has the opportunity to watch one.

DISCUSSION.

J. Ivimey Dowling, M. D.: From a study of the report of this case by Dr. Warner, I am of the opinion that there is a distinct relationship between the attack of grippe of the year previous and the middle ear disease, which was followed by the brain abscess. Also, I believe that the rhinitis of three weeks' standing, combined with the chill which ensued shortly after the onset of the rhinitis, were the probable exciting agents.

We all know that grippe is frequently complicated with middle ear disease, and from my observations it seems that the effects of grippe upon the ear may be divided into immediate and remote. The immediate we are well-acquainted with, but the remote effects are seen only after the lapse of months, or of a couple of years, and are due to a probable hyperplasia of the lining of the Eustachian tubes, resulting in strictures of the same, with later tinnitus and other symptoms indicative of serious tympanic changes. It is my belief that the case under discussion suffered from Eustachian strictures, subsequent to grippe, and that at the time of the rhinitis some of the secretion had found its way into the tympanum, and that at the time of the chill there was a probable vaso-motor disturbance, resulting in occlusion of the Eustachian tube of the affected side, thereby preventing the drainage which had previously existed, and the infection simply followed the path of least resistance, passing by means of the arterioles through the walls of the tympanum, causing brain infection, which, as I infer, Dr. Warner believes was likely present from the beginning. It is possible that an earlier operation, providing the brain case was opened, might have allowed of sufficient drainage to have forestalled the more serious consequences, but it is a very difficult matter to obtain the consent of the patient, or his relatives, to operative procedures until they see serious reason for it. Some months ago Dr. Jacobi wrote an article, in which he stated that physicians sometimes erred on the side of expectant treatment, hoping that symptoms would improve or more decided symptoms appear which would warrant radical treatment.

I think his experience may be applied to these cases, and the case here cited is only another proof of the seriousness of middle ear suppuration.

Had Dr. Warner's convictions been followed possibly the result might have been more favorable to the patient. It is easy to criticise, but difficult to dare to do when the odds seem to be against you.

Believing with Dr. Warner that every one of these cases is of burning interest, let me cite a case that came under my care during the past winter, the only successful feature of which was that our diagnosis was corroborated as the patient died.

Early in January of this year a man was brought to the hospital with the provisional diagnosis "suffering from the effects of knock-out drops." He could not give any account of himself, and after being put to bed was drowsy, taking liquid nourishment or water only when roused to do so. Examination of the urine revealed albumin, and this threw us off the track for the time being, for he was treated for a nephritic condition for several days before the right diagnosis was made.

Being asked to see the case, I examined from the standpoint of a specialist, finding a seemingly quiescent otitis media suppurativa, there being no discharge of pus, but some destruction of a membrana tympani of the left ear. Ophthalmoscopic examination revealed double optic neuritis, and at this time there was some facial paralysis of the left side.

Consultation at this period resulted in delayed operation, because it seemed that the symptoms might be entirely due to the condition of the kidneys; however, the next day the wife of the patient came to Albany from her Philadelphia home, and from her we learned that the discharge had suddenly ceased some days before, and since that time her husband had been in an ugly mood, which she attributed to liquor. This point seemed to me to be the missing link necessary to establish a positive diagnosis of brain affection, secondary to middle ear disease, and mastoiditis.

After explaining matters the wife gave her consent to operation, which was performed without delay. The results of operation were most gratifying, for on opening the mastoid process some granulations were revealed in the mastoid cells, and also in the tympanum. The opening was then extended into the squamous portion of the temporal bone, and here we encountered pus. This opening was sufficiently enlarged to permit of free drainage. Exploration by means of trochar failed to locate any cerebral abscess, so the wound was dressed and the patient returned to bed. He died at 12:30 A. M., January 20, 1902. An autopsy followed at 11 that morning, performed by Dr. Blumer, of Albany. The autopsy of interest to us is as follows: Right and left kidney—Fatty capsule, large in amount. Fibrous capsule strips off easily, leaving a smooth, rather pale surface, dotted with minute hæmorrhages. On section cortex is swollen; markings are indistinct; most of the glomeruli are pale; numerous hæmorrhages are scattered through the kidney substance. Skull cap is sclerotic. Dura is not adherent and not thickened. Longitudinal sinus contains fluid blood and post-mortem clots. Pia-arachnoid over anterior three-quarters of convexity on both sides, particularly on left, is covered here and there, especially along the course of vessels, by a creamy, slightly viscid, yellowish pus. No signs of brain softening. The lateral sinuses contain fluid

blood. Tissues about the fifth nerve and gasserian ganglion of left side are infiltrated with pus.

Anatomical diagnosis, Chronic Otitis Media Suppurativa, Secondary Mastoiditis, with acute purulent lepto-meningitis, affecting mainly the convexity, congestion and œdema of lungs, with healed tuberculosis at left apex. Pleural adhesions at right apex. Cloudy swelling of liver. Acute spleen tumor. Acute hæmorrhagic nephritis.

Brain—On section appears normal to the naked eye.

G. A. Shepard, M. D.: When I saw this case the first time the only call for an operation was a slight discharge from the ear. There was evidently something of a chronic nature the matter with his head. From the standpoint of the aurist there was really no indication for an operation, except extreme thickening of the membranum tympani. I should judge that it was at least one-sixteenth of an inch thick, and I knew from experience that that was a bad sign; it usually points to disease that has extended beyond the tympanum proper. Now in cases like this we are bound to employ every means of arriving to a correct understanding of the condition before deciding upon an operation. No doubt you have seen accounts of leucocytosis recognized by means of a blood count, as an aid in the diagnosis of obscure cases of suspected appendicitis or other surgical diseases of the abdomen.

I have never tried this method, but in another case of this kind I would try it, in the hope of deriving some information that would lead to a better understanding of the case. If any one here has had experience in the use of that means of diagnosis, I wish that they would give us the benefit of it. We need all the help that we can get before we can say with absolute certainty when an operation is necessary and when it is best to trust to other means and the efforts of nature.

J. I. Dowling, M. D.: I forgot to state that there was a blood examination made in the case cited in my discussion, and leucocytosis proved to be present of the degree of about 18,000. We had tried it in other conditions and it had seemed to be a valuable help. We did not place entire reliance upon it, but regarded it as an aid.

G. A. Shepard, M. D.: Is it not necessary to make several counts at different times during the same day in order to get a true knowledge of the blood condition?

J. I. Dowling, M. D.: We had three counts made in this case and the average taken.

ABSCESS OF BRAIN DUE TO EAR DISEASE.

BY J. MARTINE KERSHAW, M. D.,

St. Louis.

WHEN abscess of the brain is set up through infection from disease of the middle ear, the difficulty is incurable without recourse be had to surgery. No drug with which I am acquainted will cure, or even palliate the symptoms due to cerebral abscess. The disease develops slowly. Cases of chronic otitis media have lasted twenty years, and then set up cerebral abscess through infection from the pus secreting tissue. It is true, few cases recover even when operation is undertaken, but, as none recover without operation, exploratory surgical proceedings are justifiable. It is difficult, however, to obtain the sanction of friends when the patient exhibits no signs of pain or distress. However, the hopelessness of a case of this kind as to recovery should be explained and permission to operate be obtained whenever possible and as early as possible. Of course the prognosis should be guarded. There are two diseases which may possibly be confounded with abscess of the brain. I refer to meningitis and sinus thrombosis.

Meningitis.

Rapid onset of disease.
Severe headache.
Sensitive to light and noise.
High temperature.
Quick irregular pulse.
Strabismus common.
Twitchings, jerkings, convulsions.

Sinus Thrombosis.

High fever.
Frequent chills.
Rapid pulse.
Œdema over mastoid process.
Sinus Thrombosis.
Swelling along jugular vein.
Exophthalmos.
Choked disc appears early in case.

Cerebral Abscess.

Slow development of symptoms.
Little or no headache.
Apathetic.
Low temperature; may be subnormal.
Slow, full pulse.
Strabismus uncommon.
Patient quiet throughout; convulsions before death.

Cerebral Abscess.

Low temperature.

No chilly sensations.
Slow pulse.
No swelling over mastoid process.
No swelling of vessels of neck.
Exophthalmos not observed.
Choked disc seldom observed.
Symptoms of aphasia, cerebellar staggering, hemiplegia and hemianæsthesia.

Bearing in mind the symptoms of meningitis and sinus thrombosis, as compared with those of cerebral abscess, it should not be difficult to determine the existence of the disease under consideration.

"There are no local symptoms produced by abscesses in the temporo-sphenoidal lobe that we can recognize unless the abscess grows to such a point as to invade the second or first temporal convolution on the left side, when sensory aphasia develops. There are no local symptoms produced by abscess in one hemisphere of the cerebellum unless the abscess grows to the point of invading the middle lobe or the peduncle upon the base, when staggering begins. Thus, it is evident that in a very large majority of the cases of brain abcess developing after ear disease the diagnosis must be based entirely upon general cerebral symptoms and not upon any local signs. These general symptoms in the order of their importance are: (1) Headache, usually general, occasionally noise on the side of the abscess; (2) mental irritability and mental dullness, with slowness of thought, imperfect attention and memory, and occasionally delirium; (3) prostration, stupor, and appearance of illness wholly out of proportion to the other symptoms; (4) temperature occasionally subnormal, showing little variation, rarely high and usually about 99 degrees, and a pulse which is slow and sometimes intermittent; (5) tenderness of the head to percussion and an elevation of temperature over the side of the head on which the abscess lies; (6) chilly sensations and even an occasional chill; (7) disorder of the entire digestive system, nausea, vomiting and constipation; (8) facial paralysis of the peripheral type on the side affected; (9) optic neuritis may appear, but is not constant or even a frequent symptom."*

I was called to see a case having obscure symptoms. She had been sick for two weeks. She had remained in a semi-conscious condition from the beginning of her sickness. Her mind was dull, she smiled in a meaningless way, and answered questions slowly and only after the lapse of ten or fifteen seconds. She had no pain, a full, regular pulse of sixty beats per minute and a temperature of 99 degrees. She had

*Brain Surgery. Starr.

suffered from a discharge from the ear for twelve years. I deemed exploratory measures necessary and *trephined the skull one and three-fourths of an inch above, and one and one-fourth inches behind the external auditory meatus,* aspirated the brain at the point of entrance and found a little pus, but evidently did not reach the abscess proper. Not getting immediate relief friends objected to further efforts to find abscess, and the patient died thirty-six hours after the operation. In two other cases the same symptoms were present. Both had chronic otitis media, the slow pulse, low temperature, apathetic condition of the mind and the other marked symptoms observed in all uncomplicated cases of cerebral abscess.

*The following case, which is described by Von Bergmann, offers a good illustration of the history of an abscess secondary to ear disease: "The patient had suffered from time to time during fifteen years from a purulent discharge from the ear, with occasional earache. The pain suddenly became more severe than usual and he began to have attacks of vertigo; in the course of a few days his appetite failed; he began to feel sick and to have chills and fever at night. At the same time headache became very severe and kept him awake at night; this headache was general, but more intense upon the right side, which was also tender to percussion. When admitted to the hospital, a few days after these acute symptoms had begun, he gave the impression of being a very sick man; was apathetic and stupid, and answered questions with difficulty and slowly; his skin was slightly yellowish and his tongue thickly coated; his temperature was 99 degrees and pulse only 50; there was an occasional twitching in the right side of the face; the pupils were equal and reacted promptly; the right ear was filled with granulations and was discharging pus; the hearing was much diminished. The mastoid process was not swollen or tender, but percussion above the ear over the temporal lobe was very painful. The symptoms mentioned increased in intensity during the following week; his pain became greater and his mental condition more stupid. Von Bergmann then trephined above the ear, exposing a space 3 cen. square. The dura pulsated, and when it was divided the brain bulged into the wound. Incision into the brain did not at first reveal the abscess, but the third incision directed somewhat forward gave exit to 30 c. c. of fetid green pus. Exploration by the finger showed the abscess cavity with a thick wall. This was washed out with iodoform ether and drained by a tube 4 cen. long; the tube was surrounded by layers of iodoform gauze, which protected the brain

*Die Chirur. Behandl. d, Hirnkiankh.

and membranes from contact with the pus, and the wound was thoroughly washed out before being dressed. The pulse rose from 50 to 88 as soon as the pus was discharged; a daily change of dressing with a progressive closing of the abscess followed, so that on the ninth day the drainage tube was shortened and by the end of the sixth week the wound had entirely healed. From that time for a year following the patient was in perfect health."

*"Whenever severe cerebral symptoms develop rapidly after an injury to the head which has broken the scalp, or after an operation upon the nose, orbit, or ear, or during the progress or subsequently to an otitis media or chronic nasal discharge, an abscess of the brain must be thought of. If other conditions can be excluded, and if the situation of the abscess can be determined either by a study of the local symptoms or by a knowledge of the cause producing it, an operation should be undertaken at once. The earlier the surgeon is called in, the better the chance of the patient. The opening in the skull should be large enough to allow free exploration of the brain and to secure free subsequent drainage. The drainage should be kept up until the abscess cavity closes from the bottom. Every endeavor should be made to prevent pus from coming in contact with the membranes. The wound should be dressed frequently and kept clean. The general condition of the patient should be attended to, so that every opportunity for recovery may be afforded."

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*Brain Surgery. Starr.

A CASE OF CEREBELLA-ABSCESS FOLLOWING CHRONIC SUPPURATIVE OTITIS MEDIA.

BY FREDERICK W. COLBURN, M. D.,

Boston, Mass.

THE aim of this paper is not to present a treatise on cerebella-abscess, or anything of the kind, but rather to report somewhat in detail a case which I had the good fortune to see and observe in the "Ohren Klinik," in Halle.

The case in question was a German country girl, twenty years of age. She was well-developed, muscular and accustomed to manual labor. At the age of ten she had the measles, which left in its wake a bilateral otorrhœa which has since persisted.

One week previous to admission to the hospital the patient began to suffer with severe pain behind the right ear, associated with intense headache. There was frequent vertigo, at times rendering the patient partially unconscious. The severity of these attacks and their duration diminished with each succeeding onset. She had had chills several times, followed in each case by a profuse perspiration. Her appetite has been poor and she has been a poor sleeper of late.

On admission she complained of severe headache and dizziness; was unable to walk alone; face flushed; pupillary reaction normal. Examination of the retina revealed a disc not sharply defined; veins were thickened, but not twisted.

Muscular reflexes normal. Pulse rather slow, but regular; between 55 and 60 per minute.

Examination Revealed—Redness and œdema behind the right ear. Tenderness on pressure over the mastoid and sensitiveness to tapping over the right side of the skull, especially in the occipital region. The canal was filled with pus, upon the removal of which a bulging of the postero-superior wall was revealed sufficiently extensive to obscure the tympanic-membrane. The left tympanic-membrane contained a large perforation in the anterior-inferior quadrant.

The hearing on both sides was greatly diminished, the left being slightly better than the right. Temperature about 99°.

On the following day, November 14th, the patient was anæsthetized and the mastoid process immediately chiseled out, together with the

postero-superior wall of the bony canal, the external portion of which was carious and contained granulations which protruded into the canal from behind.

The mastoid cells were found to contain purulent material, while the antrum was filled with a cholesteatomatous mass. In the middle ear the malleus was carious, while the incus was wanting. Over the oval window there was a small fistula into the labyrinth from which there was no pus seen to exude. The sinus was exposed, but the local appearance associated with the low temperature and pulse did not warrant the opening of it. Immediately following this operation lumbar puncture was done, resulting in a stream of clear fluid issuing with a moderately strong pressure. Microscopic examination revealed no bacteria in the fluid. Pulse continued slow. During the afternoon the pain left, only to return at night.

November 15th—Intense pain and headache in occiput during the night and this morning. Head bent well backward at nape of neck. Patient groaning with pain. Rational. Pulse, 48; respiration, 22 and irregular, as if from intra-cranial pressure; temperature, 99.1°.

Lumbar puncture was again resorted to with the same result as on the previous day. Anæsthesia (chloroform) was then commenced for the purpose of trepanning the cerebellum. Almost at the beginning of anæsthesia the patient suddenly, without warning, ceased breathing. Artificial respiration was immediately resorted to without apparent effect. Air would not enter the lungs. The pulse, almost instantly, jumped to 120 per minute, the patient rapidly becoming cyanotic. Thinking there must be some obstruction at the glottis, tracheotomy was at once performed, resulting in the inspiration of air with nearly every artificial effort. There was no spontaneous effort at this time on the part of the patient to do her own breathing, however. While all this had been going on the operator was making good use of his time. A quick incision was made posteriorly from the middle of the mastoid wound nearly to the occipital protuberance. In an instant the periosteum had been reflected, and with chisel and mallet an opening into the cranial cavity was made 1½ in. long by 1 in. in breadth. The dura was incised and the scalpel thrust into the brain-substance in a direction forward, upward and inward to a depth of 1½ inches.

The removal of the scalpel resulted in an immediate flow of fœtid pus. Spontaneous respiration was soon established after the evacuation of the abscess-cavity, which was nearly two inches deep and extended almost to the median line.

The cavity was irrigated with a 2% solution of Boracic acid, a drainage-tube inserted and the wound packed with iodoform gauze. The tracheotomy tube was left in place.

Color soon came into the face again and consciousness was soon restored. In the evening the temperature was 102°, while the pulse remained at 120 per minute.

On the following morning the patient was breathing quietly, only an occasional clogging of mucus in the throat. There were some incoherent movements of the right arm, otherwise the mental state was fairly clear. She answered questions somewhat reluctantly, but correctly. Headache returned toward night, accompanied by groaning and crying. Temperature, 101°.

November 17th—No pain. Appetite good. Temperature, 100.1°-102°.

November 19th—Dressing changed today. Cavity irrigated with Boracic acid solution, which brought away considerable fœtid necrosed fat. Vomited several times. Headache returned again in the evening. No fever.

November 21st—Dressing changed daily. The mastoid wound also dressed today and both cavities irrigated as before. Headaches still persist, with intervening periods free from pain, during which times the patient is cheerful, at others she is somewhat inclined to be demented. Memory good. No fever.

One week later the headaches began to increase. The prolapse of brain-substance diminished in size. Patient inclined to be drowsy during the day. Lumbar puncture was again performed with the same result as on the previous occasions.

By December 1st the prolapsed tissue had increased in size again. Headaches were little, if any less, the temperature remaining about the same, at 100°; pulse, 100 also. Again lumbar puncture was tried, this time resulting in less fluid, mixed with a little blood.

December 2d—Temperature again up to 101°. In changing the dressing pus was found to be exuding from the anterior border of the prolapsed tissue. Gauze drainage was applied at this point. The prolapse increased to the size of an English walnut, while the temperature continued to rise and the pulse-beat to slacken. Headaches are relieved by the dressings.

December 4th—The patient coughing considerably and raising purulent sputum. Temperature, 103°.

December 6th—The prolapsed tissue distinctly smaller, a large piece

of necrotic tissue coming away during the dressing. Temperature dropping and the pulse becoming gradually weaker.

December 10th—Patient vomiting frequently. Headaches coming with less frequency.

December 13th—Vomiting repeatedly. No prolapse or discharge from the wound. Temperature sub-normal (96.1°-97°); pulse, 48 and feeble.

December 15th—Right-sided abducens paralysis appeared. It was found necessary to administer wine on account of the weakened pulse.

December 16th—Pulse so much weaker than on the day previous, that ether was given hypodermatically. Headache and vomiting still persist.

December 18th—The temperature jumped to 101.8° this morning. The dressing was found to be saturated with a clear colorless fluid escaping from the abscess-opening. The escape of fluid was continuous, increasing to a steady dripping from the wound. The sensorium was clear. For the next three days the conditions remained about the same.

December 23d—Some of the fluid from the wound was collected in a sterile vessel and centrifuged. The sediment thus obtained was subjected to microscopic examination and found to contain streptococci. The arms and hands of the patient were constantly oscillating back and forth.

December 24th—Rotary nystagmus present, and patient unable to talk. In fluid from lumbar puncture there were plenty of polynuclear leucocytes, but no micro-organisms. In non-centrifuged fluid from the abscess-opening there were abundant streptococci. Temperature, 104°.

Toward evening on the 26th the temperature began to fall, deep coma set in and the patient died on the following morning.

The result of the autopsy may be of interest at this time, as it presents, in a few words, the exact words, the exact condition of the patient and against what odds the physicians and the patient had to fight. The diagnosis from the post-mortem examination was as follows:

Abscess of the right cerebellum, with breaking through into the fourth ventricle. Purulent basilar-meningitis. Encephalitis. Multiple abscess of the kidney. Atelectasis of the lungs and suppurative bronchiolitis.

In the location of the labyrinth there was a large defect in which there was no sign of the spinal-labyrinth visible. There was also a defect in the posterior surface of petrous bone corresponding to the external semi-circular-canal.

In concluding, allow me to mention a few points that may be of especial interest:

1st—The cessation of respiration during the early stages of anæsthesia (chloroform) and the absolute lack of spontaneous response to artificial respiration, even after tracheotomy had been performed, until the cerebella abscess had been evacuated.

2d—Lumbar puncture was performed five times in this case, each time with a negative result. The question comes up as to the value of this procedure as a means of diagnosis. To my mind in the above case it was practically useless, as it showed nothing abnormal until the patient was in a dying condition. Personally, I think the dangers that may follow are greater than the doubtful advantages to be gained by its use. I should like the opinions of the members of this society on this subject.

Considering the pathological conditions found at the autopsy it seems somewhat surprising that the patient was able to survive as long as she did.

THE USES OF THE SALTS OF POTASH IN DISEASES OF THE EAR.

BY S. S. KEHR, M. D.,

Sterling, Ill.

THERE are certain family resemblances between all of the members of the potash family. The action of some of them is very complex, producing profound and diverse alterations of function and nutrition of the different organs. The most serious and important lesion produced by the alkali salts is paralysis of the heart muscles. The organs of respiration are not affected. The action of the potash poisons is on the motor centers of the heart muscles and not on the pneumogastric nerve. With this hint, you would expect to find the salts of potash of use in great muscular weakness, what is termed paresis, such an exhaustion as accompanies convalescence from protracted diseases.

The salts of potash produce profound anæmia, increase all the secretions, especially the urine. Of all the innumerable habits of the civilized world, there are none that are so pernicious and produce so many incurable maladies as the universal habit of drinking the different alkali waters. The sufferer becomes emaciated as well as anæmic.

An alkali stomach does not favor the assimilation of food.

Kali patients are always tired and cold. Headache, vertigo and convulsions result from violent poisoning. Only in the most exceptional cases can the potash salts be indicated where there is fever. The kali patients have great sensitiveness to cold amounting to intolerance, which is a very important symptom. They are not affected by dampness as the *Calcarea carbonica* patients, but only by cold. The time of aggravation of all the potash salts is from 2 to 5 A. M.

KALI BICHROMICUM.—This remedy is indicated generally, although not exclusively, for fat chubby children; light-haired persons who are inclined to grow fat. The action of this remedy, on the mucous membrane, is quite marked, extending from the mucous membrane to the fibrous tissue and many of the glands. It first causes violent inflammation associated with a great deal of redness and swelling, at first producing an excessive amount of mucus from the over action of the

muciparous glands; which is rapidly turned into a fibrous exudate with a tendency to formation of false membranes. The remedy has no effect on the bones, but shows a decided power of destroying cartilages.

Pathologically the ulceration of *Kali bichromicum* may be likened to a conductor's round punch; circumscribed, deeply penetrating, not spreading, without diffuse infiltration of the submucous tissue, edges generally indurated resembling the ulcer of syphilis, and would be the indicated remedy if we prescribed for a single symptom of that sort

The characteristic exudations of the mucous surfaces of bichromate of potash poisoning are ropy and stringy. This symptom is true of the coryza, it is true of the discharges in pharyngitis and laryngitis, and also applies to the discharges from the ear. This general characteristic exudation is not wanting in any part of the body.

Kali bichromicum has great prostration, wandering pains, shift rapidly from part to part, not continue long at any place, and intermit; pains in small parts can be covered by the tip of finger. All symptoms aggravated at 3 A. M., or from cold and after eating, and ameliorated in the afternoon and from heat.

This remedy is indicated in earache, especially of the left side, when the pains are sharp and stitching in character and shoot up into the head, roof of the mouth, also down into the neck. The glands of the neck may swell and the parotid gland on the side affected; and pains will shoot from the ear into the swollen glands. Inflammation of the middle ear, particularly when the membrana tympani is much congested. The membrana tympani and mucous surfaces of the inner ear are ulcerated. The pains in the ear are pulsating, especially at night.

The external meatus is swollen, inflamed and painful. The tenacious, stringy and purulent discharges distinguish *Kali bichromicum* from other remedies.

In many cases accompanying the ear malady, we will find a thick, lumpy or ropy discharge, which may be blood stained, from the nares.

Pain across the root of the nose with frontal headache. Obstruction of the nares with unsuccessful attempts to clear them; pain in the nasal bones and septum; syphilitic ulceration of the mucous membrane with or without caries. Atrophic catarrh, tickling in the nose and sneezing, especially marked in the open air.

The discharges from the naso-pharynx and pharynx are decidedly stringy. The follicles in follicular pharyngitis become hypertrophied and look like little tubercles on the pharyngeal wall and discharge a white, cheesylike mass; acute inflammation of the pharynx with pale or relaxed mucosa; chronic inflammation which is dark and glossy.

Sticking pains from the throat through the Eustachian tubes into the middle ear. The uvula may be ædematous and elongated. Chronic ulcer on the posterior surface of the soft palate.

With the preceding conditions the patient may be suffering with a chronic laryngeal catarrh with varicose veins of the larynx.

Hard, dry or thin expectoration of mucus, the latter resembling the white of an egg. Hoarseness and cough, hollow voice with dryness of the pharynx and larynx.

KALI CARBONICUM.—This is not as deep an acting remedy as is *Kali bichromicum*. It is not so destructive to the mucous membrane, but produces excessive irritation bordering on inflammation, yet not quite reaching that point. The mucous membrane under its influence becomes extremely dry, with sharp stitching pains. The *Kali carbonicum* patient complains of great chilliness; every time the patient goes out of doors he becomes chilly if the air is in the least cool, not having the normal resistance to temperature.

The remedy is suited to old people and for fat people with lax fiber, and especially in anæmic persons.

There is a discharge of liquid cerumen or pus from the ear. Stitches in the ear from within outwards with drawing behind the ears.

The right ear is hot, the left pale and cold. The hearing is impaired.

Kali carbonicum has thick, red scurfy-covered nares. Fluent coryza, which is excoriating. The nares are obstructed, and the patient can only breathe with the mouth open, which is relieved in the open air, but returns as soon as the sufferer enters the warm room. This remedy has great accumulation of mucus in the pharynx. Sticking sensation in the throat, as if a fish bone had been lodged there, whenever he takes a cold. Tenacious mucus in the posterior pharynx in the morning, which can neither be swallowed nor hawked up. Expectoration of small round lumps of mucus.

KALI IODATUM.—The action of this drug resembles very closely that of Mercury; it does not act on the higher tissues of the body as does Bromide of potash; disorganizes fluids and destroys tissue—as the fibrous—particularly the periosteum and its connective wherever they are found. The tendency of the drug is to produce infiltration, so that when it is thoroughly indicated there is an œdema or infiltration of the parts effected.

This remedy has but few ear symptoms, and are usually of a syphilitic origin. Darting pains in the right ear. Severe tearing pains in

the ear and mastoid. Boring pains in the ears. These conditions are worse at night. In the chronic proliferous form of catarrh of the middle ear there is a burning and scraping in the pharynx. The discharge from the ear is yellow and often blood-streaked.

The following naso-pharyngeal conditions accompanying the ear malady: Severe coryza in patients who have been mercurialized repeatedly. Every exposure to damp, cold weather causes the nose to become red and swollen. Sneezing, with congested nares. Syphilitic ulcers of the nose. Tight full feeling and throbbing in the nasal bones. Ozæna, scrofulous, syphilitic or mercurial, or a combination of all these.

Uvula is swollen and elongated. Œdema of the mucous membrane of the pharynx, with gumma and deep ulceration, with great distortion of tissue. There is great itching and dryness of the throat. Discharges resemble the white of an egg.

KALI MURIATICUM.—This remedy corresponds to the second stage of inflammation of the serous membrane when the character of the exudation is plastic. It is indicated in the croupous or diphtheritic exudation of the mucous surface. The principal general characteristic symptoms are flour-like scaling of the skin, anæmia, strumous condition, follicular infiltration, hæmorrhage—which is dark, black, clotted or fibrous. The expectoration is thick, white and gray in character. May resemble the white of an egg.

The aurist has in *Kali muriaticum* one of the most useful and positive of all our remedies. It is one of the most beneficial remedies we have in the treatment of chronic catarrhal condition of the middle ear. It is of great aid to hold in check those chronic catarrhal cases which go persistently from bad to worse before any permanent tissue changes have taken place. It is chiefly suited to the second or later stages of catarrhal states of the naso-pharynx and Eustachian tube, which, by continuity of the mucous membrane, extends to the cavity of the middle ear itself. There is deafness or earache from swelling of the Eustachian tubes, with swelling of the glands of the neck. Granular condition of the external meatus and membrana tympani. Moist exfoliation of the epithelial layer of the tympanum, or a dry scaly proliferation of the epidermis of the walls of the external meatus, with a tendency to atrophy of the parts.

Crackling or snapping noises in the ears on blowing the nose or swallowing. Slowly progressive deafness, with or without subjective noises in the ears, and many times without pain consequent upon slow proliferation, with interstitial thickening. The remedy is more fre-

quently indicated in the non-suppurative than in the suppurative form.

It is especially useful at the termination of an acute suppurative form to clear up the remains of the inflammation, to prevent as far as possible its evil effects in inducing thickening of the mucous membrane of the tympanic cavity and modify the tendencies to adhesions, which constitute one of the chief dangers.

The naso-pharynx presents the following conditions: Dry coryza; stuffiness of the nose; discharges are white and thick; epistaxis. Acute inflammation, with a decided burning dryness. Purulent form of acute nasal catarrh. Adherent crusts in the vault of the pharynx. Adenoid vegetations when associated with follicular pharyngitis with the characteristic discharge. Throat covered with grayish patches or spots. Hawking of mucus from the posterior nares. The base of the tongue is coated white or gray.

KALI PHOSPHORICUM.—This remedy is indicated in conditions arising from want of nerve power. Atrophic condition of old people. Hæmorrhages of a septic nature. Exhausted mental condition after mental exertion or great strain. Restores muscular debility following acute diseases dependent upon innervation. This remedy has won its greatest laurels in those innumerable cases known as neurasthenia; anæmic conditions. Suppuration, with dirty, foul, ichorous, offensive discharges of pus. All symptoms are aggravated by cold air; worse after rest and when alone.

Kali phosphoricum is especially indicated in deafness from want of nerve perception, with weakness and exhaustion of the nerves of the whole body. Ulceration of the membrana tympani. Itching in the auditory canal. Noises in the ears from nervous exhaustion. Ulceration bleeds easily, shows little tendency of granulation. Hearing supersensitive; cannot bear the least noise. Suppuration of the middle ear, pus being watery, dirty, brownish and very fœtid. Dullness of hearing, with noises in the head.

Bleeding from the nose and disposition thereto from weakness. Sneezing from the slightest exposure. Yellow crusts blown from the nose. Ozæna.

Thick mucus hawked from the posterior nares. White solid deposits like diphtheritic membrane on the enlarged tonsils. This remedy is always to be thought of in all throat diseases where there exist mental and nervous prostration. There is a great desire to swallow all the time, having a sensation as though the mouth was full of saliva.

KALI SULPHURICUM.—This remedy has but few symptoms that are

of interest to the aurist. Ailments accompanied by profuse desquamation of epidermis. Mucous discharges are of yellowish color. Evening aggravation, with rise of temperature, or in a heated room.

Earache, with yellow, watery discharges. Inflammation of the ear and throat, involving Eustachian tubes, with yellow, slimy discharge, causing deafness. Auditory canal filled up with polypoid tissue. Suppuration of the ear when the secretion is thin, bright yellow or greenish. Pain under the ear, which is sharp and cutting, with piercing pains below the mastoid.

Yellow watery discharge from the nose, worse in the evening or in a heated room. Stuffy colds, with large collection of greenish discharge. This remedy is indicated in diseases of the throat when the secretions are yellow and slimy or of a watery nature, aggravated in the evening or in a heated room.

DISCUSSION.

F. P. Warner, M. D.: As to the paper of Dr. S. S. Kehr on the Salts of Potash in the treatment of ear diseases, I have nothing but commendation. This is a class of paper which is very valuable to the profession. It defines sharply the uses of each of the salts in the treatment of nasal pharyngeal, laryngeal and ear diseases. This paper should be published in pamphlet form and distributed among the profession for reference. Not long since a case was prescribed for of post-tonsillar abscess. The swelling had become large; the glands of neck were swollen; uvula was terrifically œdematous; pains in the ear were excessive; the whole throat was swollen and of dark red appearance. Patient could swallow only with the greatest difficulty and no food could be taken. Spasm of the glottis would come on frequently. At the end of the tenth day, after *Belladonna, Ferrum phos., Phytolacca, Mercurius, Hepar sulph.* and other remedies had done no good, *Kali bichromicum* was prescribed and patient began to improve from the first. There was no stringy discharge. The appearance of the uvula suggested the use of the *Kali bichromicum.* The ear symptoms were the first to subside. Recovery was rapid and complete.

The doctor's remarks under *Kali mur.* are complete and valuable. Were more cases in the subacute and latter part of acute stages of inflammation of naso-pharynx and ear treated by this remedy chronic otitis media would not be so common. This is a valuable remedy to prevent acute otitis media lapsing into the chronic form. Any remedy that will do this is one of the most valuable of the pharmacopa. Too many physicians in general practice think that when an abscess in ear is broken, or the pain of acute otitis media subsides or a cold in head or nose and throat is broken up, their duty to their patient is done. Here is where many a mistake is made and mischief done. The case is given up too early and the disease hangs on, thickening of the membrane of

Eustachian tube and middle ear occurs and deafness follows. Along in the train of the above conditions, *Kali mur.* being given after the acute conditions subsides, chronic deafness in many cases would be avoided.

The writer has seen a large cold abscess of the neck of a year's standing, which was interfering with the normal action of ear, subside under the persistent action of *Kali iod.* The ovaries were also enlarged and prolapsed, and while no syphilitic history could be gotten, yet this condition as an inheritance probably was a factor in the case. As we have said, this paper is a very valuable one and deserves the attention of the society. Cases might be multiplied of the good effects of these remedies, and this paper should have a prominent place in our libraries. Our literature on the treatment of chronic ear diseases lack definiteness, and any paper on a class of remedies like this one on the potash salts should be highly commended. The analysis of these different remedies is clean cut and makes the knowledge of them in prescription work definite and helpful.

E. B. Hooker, M. D.: What I have to say about this subject will apply to the potassium group as a whole rather than to any individual member of it. It relates to the preliminary selection of the remedy, before finally picking out the particular one for the case in hand. None of the potassium salts are likely to be indicated in a case where there is much fever. Absence of fever then is one of the first general characteristics of this group. One of the reasons why *Kali bichromicum* has failed to do good in croup, though many have administered it, is because it has been given when high fever was present. The second characteristic is the prostration which the patient experiences. No matter what the diseases, or what kind of tissue is affected, prostration is sure to be present if the potash salts are needed. The third important characteristic, one that applies with perhaps one exception to the whole group, is aggravation from cold. With these three symptoms present seek the remedy among the Kalis. You can then discriminate as to the particular salt that you want. The writer of the paper discriminates excellently between the two remedies *Calcarea carb.* and *Kali carb.;* the distinguishing points are brought out in a masterly manner.

In 1894 Dr. T. F. Allen prepared an excellent resume of the kali salts, and in that paper he said one thing that impressed me very much; he said that you could use the indications for the kalis to help select an appropriate climate for a patient. Colorado, for instance, with its cool, dry, thin air, was not suitable to the *Kali carb.* patient on account of aggravation from cold. On the other hand, it was the very climate for *Calcarea* patients, because such are aggravated by dampness. It seemed to me a novel and striking application of the modalities of these remedies.

E. D. Brooks, M. D.: We nearly all of us could plead guilty to having prescribed *Kali mur.* empirically in cases of middle ear trouble, or at least in chronic middle ear catarrh. Its use in that disease was not brought out very clearly in the paper. This salt, especially of the kalis,

is indicated in cases where there is hyperplasia of tissue or any increase of tissue without organization. There is an increase of tissue, but it has not quite reached to the point of definite organization. The *Kali iod.* takes a stronger hold upon glandular tissue, and the mere fact that the glands of a part are affected, as in the neck or in the pharynx, would be one indication for it. The *Kali mur.* would come in better where the glands were not particularly affected, as in a simple catarrhal inflammation of the mucous membrane lining the Eustachian tube or the walls of the tympanum; of course, in either case the other symptoms should correspond.

TERTIARY SYPHILIS OF THE LARYNX, WITH AN ILLUSTRATIVE CASE NECESSITATING TRACHEOTOMY.

BY GEO. B. RICE, M. D.,

Boston.

TERTIARY SYPHILIS in the larynx, as well as elsewhere, manifests itself in diffuse or circumscribed infiltrations, and in ulcerations. The diffuse infiltration usually involves the submucosa and may extend to the muscles and to the perichondrium, and muscular movements be interfered with. Inflammatory swelling and œdema may also complicate the affection. Gummata are easy of recognition when the infiltrations are distinctly separated from the surrounding healthy tissue and elevated above the surface. These swellings soon break down, however, and become ulcerations, with clean-cut edges surrounding the ulcers, and a gray or greenish gray depressed centre.

The process of infiltration may be exceedingly slow, and during this deposit, up to a certain stage of development, the patient may not suffer from serious inconvenience, except from impairment of the quality and power of the voice. There may or may not be pain, dependent upon the exact location of the infiltration. The ulcer, if it heals, leaves a cicatrix with contraction of tissue.

Mixed infection may complicate the syphilitic infection and continue after the latter has been controlled by proper medication. Swelling of the lymphatic glands of the neck are common, while anæmia and lowered vitality may be marked features of the disease.

It is often difficult to obtain a definite history of the primary and secondary lesions, because many months may supervene before the tertiary infiltration is manifest.

It has been the good fortune of the writer to have seen a number of cases of tertiary syphilis of the larynx, but none have shown so many points of interest as the case to which your attention is asked.

Case.—Mr. H., age forty-nine; of mixed parentage, Mexican and American; came to Boston in January, 1901, to open an office in connection with some important Western interests. So far as can be learned, he had previously enjoyed robust health. In the month of March, 1901, he contracted a severe laryngeal cold, which caused hoarseness, and when exercising violently slight difficulty in breathing. With the subsidence of the cold these symptoms disappeared. In June he noticed

that his voice tired easily and that he again experienced slight difficulty in breathing on over-exertion. A physician was consulted, who treated him for a short time with indifferent success, and the treatments were abandoned. During the summer the symptoms gradually became more pronounced, so that by October his voice was without flexibility and the slight dyspnœa constant, except when the body was absolutely at rest. He then consulted a number of physicians. In December one of them suggested that he see a throat specialist, and my name was mentioned.

The patient was brought to my office in a carriage on December 23d, and an examination of the larynx revealed much congestion, with the vocal bands fixed in the position of adduction, a small opening posteriorly being the only breathing space possible. With every inspiration the edges of the vocal bands would be drawn together, and a wheezy sound emitted, the expiratory act being noiseless. The voice was very hoarse and monotonous, but not lost, as would be expected under these conditions.

His general strength was good in spite of the muscular effort of breathing; there was no pain experienced, no glandular swelling present, and no specific history could be obtained.

No diagnosis was made at this time. It did not seem clear whether the paralysis was a primary condition and the inflammatory process secondary, or the reverse was the case.

As I was just recovering from a short illness, the patient was sent to his boarding place, and I asked Dr. N. H. Houghton to see him for me.

Dr. Houghton tried the usual remedies and inhalations for laryngeal inflammations without favorable effect, and called me in consultation on the 25th. We then decided to send the patient to the St. Botolph Hospital, and he was given as a last resort ten-grain doses of the Iodide of Potash every three hours, and hot applications were applied externally. On the morning of the 25th the pulse became more rapid and there was slight rise in temperature, but no other definite signs of deficient oxygenation.

Tracheotomy was now advised, but on the desire of the patient and his friends was deferred. On the evening of the 26th, the symptoms not having improved, the operation was again strongly recommended, but the patient refused and asked for further council in the person of an old school physician whom he had once employed. The request was of course complied with, Dr. Houghton remaining at the hospital to meet the consultant. About 11 o'clock I was called hurriedly and found the patient almost in extremis. He was taken to the operating room, Drs. Houghton and Davis assisting. The operation was performed with some difficulty, first, because the patient was a large man and had an extremely short and fat neck, and, secondly, the difficult breathing kept the field of operation in constant motion. Bleeding was trivial. When the trachea was finally opened, the largest tracheotomy tube was found too short to stay in the trachea, so that a soft, metal catheter was cut and shaped to fit inside the tube, and the whole apparatus held in place by tapes around the neck. Drs. Houghton and Davis went away,

and I stayed at the hospital. In about an hour I was called by the nurse and found the patient gasping for breath. The smaller tube had become obstructed by mucus and blood, and had become fixed in some way in the larger tube, so that it was necessary to remove both of them. Then the opening in the trachea closed, partly because of the mucus and blood, and partly because the edges of the wound came together, and I expected that every breath the patient drew would be his last. I hurriedly cut the stitches which held the wound together, pushed my finger into the trachea, and called for a piece of rubber tubing. In my efforts to open the trachea some of the ligatures holding the blood-vessels were torn off, and a profuse hæmorrhage occurred.

My position was not a pleasant one. Imagine the patient gasping for breath, sitting on the edge of his bed, the blood pouring out of the wound, and I trying to introduce a soft rubber tube into the trachea. Success finally crowned my efforts, and I was able to compress the blood-vessels and check the hæmorrhage.

Drs. Davis and Houghton now arrived, and the patient was again taken to the operating room, chloroform administered, and the wound re-opened. The tracheal incision was enlarged, two silk ligatures carried through the edges on each side, and the large tracheotomy tube put in and tied to the silk which had been passed through the tracheal edges. This made it impossible for the tube to slip out, and it was large enough so that by removing the inner one from time to time it was easy to keep it clean. The patient passed a fairly comfortable day following the operation, but suffered much pain on swallowing, this being due I presume to the fixed position of the tube in the trachea.

On the third day after the operation the tissue about the neck became emphysematous, pulse good, however, and temperature ninety-nine, with but little prostration. A slight odor was then noticed about the tracheal wound.

On the fourth day, December 30th, profuse discharge of muco pus through the tracheal tube, odor increased, and wound looks unhealthy. Removed tube and put in one which I had made to order.

January 1—Odor has increased, but the emphysema is less, and patient much more comfortable. Iodide of Potash in ten-grain doses four times a day was again given. Twenty-four hours later the odor was less and discharge from the tube was less, and from this time on the patient rapidly improved.

January 6—The laryngeal inflammation has subsided and the patient can abduct the vocal bands considerably, the right showing more movement than the left. No odor. Iodide increased to twenty grains four times a day.

January 7—Removed the tracheal tube and packed the opening with sublimated gauze.

On January 9th the patient left the hospital, and on the 23d was able to go to his office down town for a short time; his voice was good and the respiratory act perfectly easy. The left vocal band was still less movable than the right, however.

At present the patient seems perfectly well. He is taking now Strontium iodide, fifteen grains four times a day, and the Biniodide of Mercury, one-fiftieth of a grain three times a day.

The rapid improvement under the Iodide I believe in this case establishes the diagnosis of tertiary syphilis.

DISCUSSION.

G. A. Mueller, M. D.: The subject under discussion is a most interesting and important one. Tertiary syphilis of the larynx is by no means a rare affection. Its presence is characterized by such a variety of symptoms, owing to the particular portion of the larynx affected, that a paper such as has been presented by Dr. Rice is very interesting and instructive.

The illustrative case embodied in the paper is worthy of study, as the diagnosis is very obscure, practically the only diagnostic feature being the prompt subsidence of the distressing symptoms under the antisyphilitic treatment employed.

The subject of syphilis in general, a comprehensive knowledge of which is essential to a study of its effects on special organs, is one which taxes our resources as medical men to the utmost. Due to a specific poison it should cause certain symptoms and should yield to specific medicine, and yet its manifestations differ so much in different individuals, and it is so greatly modified by the temperament and general condition of the affected individual, that specific medication often fails to bring about the desired result. I believe in the administration of Mercury and the Iodide of Potash in appreciable doses as a direct antidote to the syphilitic poison, but I further believe in the administration of the indicated homœopathic remedy as a most valuable aid in relieving the symptoms peculiar to the particular case in hand, and I believe that a lack of success is often due to our neglect in paying sufficient attention to this phase of the case.

In the case presented by Dr. Rice there is practically no evidence of specific infection; there was simply a local congestion, which may have been due to syphilis or which may have been due to what was primarily a simple laryngitis and which developed into a stenosis owing to an infiltration into the submucous tissues. While in this case the patient seemed to improve under the administration of Iodide of Potash, I am rather inclined to believe that the improvement was the direct result of the surgical interference. The tracheotomy was obviously the correct procedure, relieving, as it did, the pressing symptoms and taking from the larynx the labor it was illy able to perform, thus giving it by the rest an opportunity to return to its normal condition.

E. D. Brooks, M. D.: I would like to ask one question. If the cure was due to tracheotomy, why was it that the general condition did not begin to improve until after the administration of the medicine?

G. A. Mueller, M. D.: I doubt whether the medicine would cause so great an improvement in the course of two or three days. The im-

provement began a couple of days after the administration of the drug, as I understand it.

G. B. Rice, M. D.: Yes; in less than forty-eight hours after its administration.

E. H. Linnell, M. D.: To what do you attribute the odor spoken of in the case?

G. B. Rice, M. D.: I attributed the odor to the specific disease. I believe that surgical wounds do not do well while the syphilitic poison is present in the system, no matter what the stage of the disease may be. Such wounds slough and fail to unite. The discharges are foul and have an odor, which is almost characteristic of the specific toxæmia.

C. E. Teets, M. D.: I am inclined to think that the improvement was due to the Iodide of Potassium rather than to the surgery. I have had cases of a syphilitic nature in which the improvement was wonderful and immediate after taking the Iodide. How was the remedy given?

H. W. Hoyt, M. D.: There are many cases of secondary syphilis, of which the history is doubtful and confused; many others in which the evidence of the patient is open to doubt, and I would rather take the evidence of the result of the treatment than the story of the patient. In the administration of the Iodide of Potash many forget to give the patient the important instructions, to drink abundance of water while taking it. If the system is flooded with water, we get a much better effect and less unpleasant symptoms. When there is œdema of the larynx, as sometimes happens under the action of the Iodide, the medicine must immediately be stopped for a time. I believe that this is less likely to happen if the patient be instructed to drink plenty of water.

J. I. Dowling, M. D.: In listening to this paper I was particularly impressed by the doctor's description of the terrible odor that accompanied the discharge. It has been my good fortune to see quite a goodly number of cases of simple gangrene and also to come across the odor from syphilitic discharges, and there is such a difference that I do not hesitate to give the odor due weight in the diagnosis of syphilis. I believe that there is nothing to equal the characteristic odor of specific ulceration. I have seen gangrenous cases in which the whole body became involved, and while the odor was bad it was not like the odor of syphilis. It is certainly a diagnostic point.

T. M. Stewart, M. D.: In discussing these questions there is always a risk of saying something that everybody knows. The great difficulty in giving a patient a course of Iodide is the stomach. I have found that the best way of giving it is dissolved in the best essence of pepsin that you can get, and then increase the dose gradually.

G. B. Rice, M. D.: We all know that the simple introduction of a tracheotomy tube will frequently arrest the progress of tubercular and inflammatory conditions, but in this case I am sure that the improvement could not be all attributed to this procedure, for after the removal of the tube the larynx was still inflamed and the vocal bands in adduction; yet, notwithstanding the use of the voice, more than I deemed wise, for he had many more callers than I liked, the improvement

went on steadily. After some time had passed under the Iodide of Potash I substituted the Iodide of Strontium for it. Various doses were used, twenty grains being the highest dose reached; then back to fifteen grains, and finally we gave the Strontium iodide, combined with the Biniodide of Mercury, the latter in doses of one-fiftieth of a grain.

I have used the essence of pepsin frequently as a vehicle in this and other cases.

I gave the Protoiodide of Mercury $^1/_{10}$ to ¼ gr. and Potassium iodide one hour after meals, the dose being increased as rapidly as could be done. The improvement in my case was manifest the second day of the treatment, and at the expiration of four weeks the patient was entirely relieved; no difficulty in breathing at all. I always try to keep a patient suffering from this disease under treatment for three years, not giving the medicine continually, but after some weeks stopping for a few days, using some intercurrent remedy, and then continuing as before.

A. Worrall Palmer, M. D.: This case brings to mind the idea of making a diagnosis of syphilis by the effect of the specific treatment. That is, are we justified in saying that a certain case is syphilitic because it is relieved or gets well on giving Iodide of Potassium or the same combined with Mercury? I heard a very interesting discussion of this subject at the recent meeting of the American Medical Association last week. It was admitted that there were conditions, or at least cases, some of a malignant nature, that were relieved and even cured by the iodides and the mercuries, but, notwithstanding that the consensus of opinion was that if a case was cured and remained cured by such treatment, it could safely be pronounced syphilitic. On the other hand, if it was only relieved, or if the trouble came back after stopping the treatment, a diagnosis was not warrantable. I shall be much interested to hear from Dr. Rice how this case gets on in the future, and hope that he will succeed in keeping in touch with it. No doubt the operation was necessary and helped the condition, but the Iodide was also indispensable.

THE THROAT AND EAR COMPLICATIONS OF LA GRIPPE.

BY E. L. MANN, M. D.,

St. Paul, Minn.

IT is, I believe, at times the duty of the physicians of the country to conduct campaigns of education, and such campaigns have from time to time been successfully conducted to the lasting benefit of the people. Such an one may be exemplified by that of vaccination. It also devolves upon those who have made special study of certain regions of the body, of certain classes of diseases, to conduct similar campaigns of education among the General Practitioners; as an illustration of such and the benefit accrued thereby, I will cite those in recent years conducted by the surgeons on the subject of appendicitis, and by the ophthalmologists on Ophthalmia Neonatorum.

The rapid rise and growth of the various specialties during the last half century has led some to predict that the offices of the General Practicioners will soon be curtailed to the point where they will be consulted by the people, and their advice sought, only to determine which of the various specialties a given case demands. I take most strenuous issue with any such idea. The General Practicioner will always head the list in medicine, and he is a check upon the idea that any organ, or series of organs, can be isolated and treated separately. We must always treat the whole patient, and not simply a part of him, and in this line the General Practicioner must often conduct a campaign of education among the specialists. There is another realm in medicine, in which the General Practitioner is always first, and must necessarily be so. I refer to preventive medicine—from the nature of things this falls to him on account of his close contact with the people, and any education of the masses which the specialists wish to conduct must be through him and his instrumentality.

I deeply regret that many of our General Practitioners look upon the specialists as trying to invade their field of work, and, under the specious title of specialist, to wrest from them certain classes of diseases which they feel more or less competent to treat; or, if not this, they look upon him as a man only to be called in when they have exhausted all their efforts and been ineffectual to achieve the results aimed at.

The treatment of any case involves, not only an understanding and treatment of the condition present, but a fore-knowledge of the lines in

which a given case may be expected to develop—the end towards which it tends; and the employment of means calculated to avoid certain difficulties that may arise; in this sense all medicine is preventive medicine. In typhoid fever one must not only treat the present condition, but guard against the results of the future ulceration of Pyer's patches that will follow. In croupous pneumonia, one must foresee and provide against the future heart failure; so in special lines, the treatment must not only combat the present conditions, but there must ever be in mind the future comylications that may arise. It is not just either to the people or to the specialists, to call upon them only after these complications have arisen. It is better and more scientific to avoid such complications than to treat them after they have arisen.

Any physician who has kept in touch with the literature on nose and ear work during the past few years must be impressed with the large share devoted to mastoid troubles in ear work and diseases of the accessory sinuses in nasal work. As a reason for this, it has been suggested that only in the last few years have these diseases been understood, but back of this fact must have been some incentive to such study. Such incentive has, I believe, come from the visitations in late years of epidemics of la grippe, which, while assuming the character of catarrhal inflammation in these organs, have by their special action led to these complications. There are, I believe, two main reasons for this: First, the profound systemic involvement in all cases of la grippe, as shown by the constitutional weakness present, and due, I believe, to the effect of the poison on the nerve centers. As early as 1893, Dr. Carl Seiler pointed out the fact that in grippe epidemics the high temperature was not accompanied by the ordinary fever symptoms, tense bounding pulse, dry skin, etc., and he attributed the large mortality in these cases in early years to treatment of the prominent symptom, rise in temperature, by the various antipyretics then in vogue, all of which are heart depressants, when, in reality, accompanying the rising temperature was a weakening heart's action and an invasion of the nervous system calling for stimulant treatment. This involvement of the nervous system and heart accounts for the general depression present in these cases, and a patient so depressed lacks the resisting power to repel complication.

The second cause is the peculiar virulence of the special poison which often invades, not only the nasal and post-nasal spaces, but the communicating cavities at once, and sets up an inflammation of unusual severity. Dr. Gorman Bacon thus described these attacks when affecting

the middle ear: "The usual symptoms seen in inflammation of the ear are much aggravated, the pain is very severe, attended frequently by a throbbing, and when perforation occurs the discharge at first contains a considerable amount of red blood corpuscles; occasionally vesicles containing blood are seen on the membrana tympana and walls of the canal. The mastoid is more frequently involved in these cases and very often this occurs simultaneously with the acute inflammation of the middle ear," all evidences of especial virulence of the poison. Dr. J. Michel, of Hamburg, says: "The chief characteristics of the symptoms of la grippe, compared with those of other infectious diseases, in uncomplicated cases, consist in an intense hyperæmia of the organs attacked; in fact, disproportionate to inflammation from other causes. The hyperæmia is the indirect cause of the complications observed, because in the weakened walls of the blood vessels it tends to rupture and hæmorrhage, because it lights up inflammations already healed; because it renders the mucous membrane highly susceptible to the reception of other conveyors of infection;" such is the testimony in regard to the ear; and in regard to the nose the condition is similar. Dr. Dudley Wright, of England, in a paper before this society last year on Suppuration of the Nasal Accessory Cavities, says: "Regarding causation of the empyæmata, I should say that my statistics show that of all general diseases influenza has played the chief role as a provocative agent; and my experience leads me to believe that the lighter and milder attacks of la grippe are more fertile causes of such complications than are the severe ones. It is probable that this is owing to the fact that patients are more liable to neglect to take ordinary precautions during mild seizures than when they are prostrated by a more serious form of the malady."

The reduced resistance of the patient and the intensity of the inflammatory process invite the complications we are considering. It is for this reason that these cases require special care in the treatment of the original infection, that, in so much as possible, these complications may be avoided. What then can we do in these cases? First, in regard to the middle ear. There are cases of la grippe in which the intense inflammation of the post-nasal spaces leads to an early and complete closure of the Eustachian tube, accompanied by the usual aural symptoms due to such closure, dullness of hearing, uncomfortable full feeling in head, tinnitus, etc., without acute pain. In such cases, I believe that the closure of the Eustachian tube is a salutary process, prevents infection of the middle ear cavity and should *not* be interfered with. I am sure I have seen cases where the mechanical opening of the

Eustachian tubes has been followed by acute otitis media. Nature had protected the middle ear by sealing up the path of infection, and the physician had opened the way to the invasion. I am sure also that I have seen such cases where the condition, as far as the Eustachian tube was left untouched, which escaped invasion, the tube not opening until the healing of the inflammatory condition of the post-nasal spaces. These are cases where we must exercise that great virtue masterly inactivity, and let the patient endure the ills he has rather than fly to others he wots not of. As soon as the middle ear has been invaded, I believe that masterly inactivity should give way to masterly activity; that as soon as effusion has taken place, even before marked burning of the membrana tympana, it should be freely opened and drainage of that cavity and the antrum and attic secured by some form of suction applied to the external canal, and the canal then loosely packed down to the membrana tympana with an antiseptic gauze, to be changed as frequently as it soaks through. In such cases I would avoid inflation of the Eustachian tubes, bearing in mind that the opening into the antrum is directly opposite to that of the Eustachian tube in the middle ear, and the danger of conveying infection to the former cavity by any means of Eustachian inflation. Cleansing of the middle ear cavity should, therefore, be accomplished by suction applied to the external canal, never by inflation.

In regard to nasal inflammations and the involvement of the sinuses the conditions obtaining are similar, except as the anatomical structure of the parts vary. The openings into the various sinuses, with the possible exception of the frontal, are direct, i. e., there is no tube in any way similar to the Eustachian canal that admits of closure, thereby avoiding invasion. The ethmoid sinuses, anterior and posterior, the sphenoid and antral cavities open directly into the nasal spaces; and, in the case of the frontal, the infundibulum is, in its entire length, a bony canal in which the mucous membrane takes the place of the periosteum and is closely adherent. It is also very short, and to my mind does not admit of closure to prevent infection; consequently we rarely have any symptoms pointing to sinus trouble until infection has actually taken place. Our aim then should be, as in the case of the ear, to secure proper drainage. Herein again the anatomical conditions differ from those of the ear, in that it is not practicable to obtain drainage, except through the infected areas of the nose; our treatment from the outset of these grip cases should center around securing drainage for these sinuses. This can be accomplished in various ways. In mild cases, es-

pecially where the tendency to sinus trouble is unilateral, the position of the head is sufficient to effect by gravity the reduction of swelling in the middle meatus. In other cases, the use of Cocaine or Adrenalin must be resorted to. Still others require operative interference; in all, especial attention should be given to the middle turbinated body, and the hiatus semilunarius to securing drainage and ventilation of the various sinuses and thereby avoiding serious inflammatory conditions in these. In thus dwelling on the local treatment of these cases, I have no desire to minimize in the least the necessity of constitutional medication. In a disease characterized by such profound systemic disturbance, medication, as well as general dietetic and hygienic care of the patient, must necessarily be of the most importance. Local treatment in its last analysis is purely mechanical.

In conclusion, I would urge that in all cases of la grippe, treatment from the very outset should be instituted with a view to warding off these complicating conditions that we know are imminent; and this can be best accomplished by, first, general tonic treatment to the patient; and, second, outside of general medication, outside of various washes for cleansing the mucous membrane, special care should be taken of the regions through which infection of the middle ear, the mastoid and the nasal accessory sinuses takes place; that is, of the post-nasal places and the middle meatus of the nose; and that a warning should be given to the General Practitioners, and through them passed on to the people, that in dealing with la grippe cases we are not dealing with a simple catarrhal inflammation of the mucous membrane, but that such inflammation possesses especially virulent characteristics in its local manifestations, and a special predisposition to invade the ear, mastoid region and nasal accessory sinuses, with a like inflammatory condition, and also by its effect on the general systemic condition of the patient, weakens its reserve powers and paralyzes his ability to ward off such complications.

DISCUSSION.

W. B. Kreider, M. D.: The altruism of the medical profession is hinted at by the author of this paper. The highest mark of honor that can be bestowed on our honored profession is that the medical profession is engaged in this altruism of preventive medicine.

Many eyes have been saved from blindness by the preventive medicine in ophthalmia neonatorum. Proper advice in the way of correct living, paying attention to the secretions and excretions of the bowels, will prevent many a case of appendicitis. Only recently the attention of oculists has been called to the many cases of blindness caused by the

use of wood alcohol. The initiative for legislative enactment to prevent manufacturing pharmacists from the use of this deadly poison was led by the oculists of our eastern cities. These are the straws that show the trend of our noble profession.

In the matter of preventive medicine I find the general practitioner and the specialist walking side by side with this star on their banner. There are aggressive doctors who no doubt at times feel that their field has been invaded, but a right mutuality will avoid this. A primary case of the grip will seek the advice of the general practitioner. The immediate complications appeal for the aid of a specialist. True, there is nothing arbitrary in this, for the laity feel that they can choose for themselves. And the general practitioner as a rule is only pleased to turn over such cases as have been studied and classified under specialism.

The essayist has made mention of the profound systemic envolvement in cases of la grippe. The condition of this depression was prominent in a few of the epidemics, and in my observation there were more sudden deaths from heart complications, and less of complications of mucous membrane when this sense of nerve depression was so prominent. The essayist mentions the depressing effects of the antipyretics in these cases, and we might add that quinine, in large doses, as given by our old school confreres in the early epidemics, had the same depressing secondary effect. These no doubt were responsible for many sudden deaths in the earlier epidemics.

Our school did not resort to these heroic measures, and consequently we did not have any monuments erected to remind us of our departed clientele. The essayist makes mention that through the general depression of the nervous system and heart the patients lack the resisting power to repel complications. My observations of the various epidemics have led me to think that, while the genus bacillus of la grippe may be the same, owing to local atmospheric or meteorological causes we have different manifestations. In one epidemic it invades the nervous system, as denoted by the profound depression. In another, the muscular system in which that terrible back-ache and general aching is so prominent. And, again, in another epidemic, the secretory system is made the brunt of the attack, and the whole mucous tract and the sinuses of the head; the latter attack yielding a prolific harvest for the aurist, as we now have a greater number of middle ear affections, as compared with the epidemics of the two former descriptions.

My observation leads me to say that when we have an epidemic of la grippe of the mucous variety the patients are of the class that are subject to catarrhs, and here preventive measures would consist in getting the mucous tract of the head in a healthy condition many months prior to the season of la grippe invasion. The essayist mentions the severity of these middle ear complications; we have noticed the same, but notwithstanding the painfulness and the severity of these attacks they are amenable to our treatment, and of many cases that have presented for treatment not one case has been left with permanently impaired hearing.

I will supplement my discussion with reporting a case of unusual severity. Miss K., aged twelve; typical blonde, subject to catarrh of the head, one of the victims of our spring epidemic, where middle ear invasion was frequent. This case run the usual course of pain of the ear, with an early rupture of the membrana tympani. The discharge freely established and continued for several weeks. The case now assumed a mastoid complication, swelling and redness in the region of the mastoid, the ear standing out at right angles with the head. This was the fourth week since the attack. I was now called in consultation, as the attending physician said he feared a mastoid operation was imminent, and he would give the case into my care and treatment. I found the opening into the membrana tympani gave free drainage, the discharge of which was quite copious. The inquisitive mind raises the question, why such a case should assume so grave a mastoid complication. The answer was in the wind, and I set my wits to cure the case.

As free drainage was established, I paid attention to local cleanliness with antiseptics. Where free drainage is established, I use Peroxide, afterwards syringing the canal with warm boraic solution. Then gently drying with absorbent cotton, and the last measure to merely dust the membrana tympani and its opening with an antiseptic dry powder, many of which are good. I am partial to Nosophen. Do not be misled that I pack the canal; merely dust it to leave the parts dry. This is done every twenty-four hours. These local measures are aids, but I believe I cured this case and avoided a mastoid operation with the internal remedies. *Capsicum* 3x and *Hepar sulph.* 6x; in twenty-four hours with this treatment the severe mastoid symptoms were subsiding, and in one week's time all mastoid symptoms were gone, and the middle ear had ceased discharging.

There are many valuable hints in the essayist's paper, and one especially when to attack the Eustachian tube, and when to let it alone; and when to let it alone reminds me that I can do no better than to emphasize the closing lines of the essayist. Teach the people how to live, fortify the system by hygienic measures, urge the correction of mucous lesions by proper treatment; make hay while the sun shines and when the blasts of la grippe arrive the system, while not immune, will be a citadel for its invasion and may prove a bulwark for its ear complications.

SOME OBSERVATIONS ON THE RESPIRATORY PASSAGES.

BY THOMAS L. SHEARER, M. B., C. M., EDINBURGH,

Baltimore, Md.

IN hospital clinics and in private practice one often hears the complaint that considerable difficulty is experienced in breathing through the nose; that a sensation of stuffiness, frequently referred to the upper portion of the nose and apt to be more troublesome at night, is a cause of great annoyance to the patient, being accompanied at times by insomnia or at least by disturbed sleep. In many cases of this kind an examination of the upper air passages will reveal the presence of deviated septum, enchondroma, polypi, hypertrophic rhinitis, adenoids or hypertrophied tonsils. But, in a considerable number of people who suffer from such difficulty in nasal respiration, the inferior meatus and the post-nasal space are absolutely free. Again, hypertrophic or œdematous enlargement of the middle turbinates, particularly of their anterior ends, or a muco-purulent discharge—a catarrhal condition affecting the middle meatus—may produce difficulty in nasal respiration, although the lower passages may be quite open. A polypus often causes pronounced nasal obstruction, even when the growth is very small and the inferior meatus free. Lastly, a slight enlargement of the adenoid tissue in the post-nasal region will cause considerable difficulty, and even result in mouth breathing. If we examine cases of this kind with the post-rhinoscopic mirror, the entire inferior meatus and the lower turbinates are readily seen and often the greater part of the middle passages. The adenonds may hide only the upper fourth of the septum, and yet obstruction be complained of. Even in cases of great adenoid hypertrophy it is rare to find the lower passages concealed from our view.

The natural conclusion from these facts is that nasal *inspiration* takes place—to a very great extent at least—through the middle meatuses. To verify this Dr. C. A. Parker* carried out a series of experiments on living subjects, making them inhale air into which the light powder of lycopodium had been blown, and then observing where it had been

*Journal of Laryngology, July, 1901.

deposited inside of the nose. To test the direction taken by expiratory currents the subjects were made to smoke cigarettes and gently to exhale the smoke through the nose, while he watched its course through a nasal speculum. He found that the in-going air impinged on the septum, about one-third of an inch from the floor of the nose, then spread along the septum, covered the anterior end of the middle turbinal and shot upward into the upper part of the nose. The lycopodium powder entirely missed the inferior meatus and the lower turbinal. Parker's conclusions are thus summarized. These observations show:

I. That during quiet respiration in a normal nose the air traverses the middle, superior and probably the fourth meatus.

II. That *inspiration* is impeded by (*a*). Spurs and deviations of the septum and enlargements of the inferior turbinated body, if they project forward and upward. (For practical purposes, the rule may be laid down that if such abnormalities cross and break an imaginary line drawn from the anterior extremity of the inferior meatus, i. e., just internal to the vestibule—to the anterior end of the middle turbinate, they will cause obstruction.)

(*b*). *Inspiration* is impeded by enlargements of the middle turbinated body, polypi, etc.

(*c*). *Inspiration* is impeded by hypertrophies and growths springing from the vault of the naso-pharynx.

III. That in *expiration* the air traverses chiefly the inferior meatus.

IV. That expiration will be more especially affected by (*a*). Hypertrophies of the posterior end of the inferior turbinal. (*b*). By hypertrophic conditions, etc., causing stenosis of the inferior meatus.

But, in addition to these different cases, I have observed instances in which none of the abnormalities just described existed; yet the patient suffered intensely from difficulty in nasal respiration. Investigation of such nasal passages usually showed the two following conditions: In some the cavities were very spacious, the mucous membrane very dry and almost devoid of secretion; the membrane covering the anterior part of the middle turbinate exhibiting the most pronounced change—actually glistening with dryness. The sensation of stuffiness was therefore due to the excessive dryness of the nasal passages, setting up such mid-turbinal congestion as to force mouth breathing. For the treatment of these symptoms I have used for years *Natrum muriaticum*—6x trit., and *Sticta pulmonalis*—3x dilution. If any signs of the formation of crusts are present I prescribe *Calcar. fluorica*—6x, and this is a

magnificent remedy for such indications. Each morning a pinch of common salt is dissolved in one ounce of tepid water and the solution sprayed through the nostrils in order to remove any dried secretions. Then some oily solution is vaporized through the cavities to protect them from the drying effects of the atmosphere. This oil should be applied night and morning. I wish particularly here to protest against the use of Menthol, Eucalyptol, Thymol, etc., in the oils that are ordinarily applied in these cases. Such ingredients merely make more trouble through their drying action on the nasal mucosa. In other people the same dryness is present, but only to a slight extent. Here, however, a small crust is frequently found just inside of each nostril; this is sufficient to block the current of air inwards and upwards towards the middle meatus. In other words, these studies teach us that in every case of nasal obstruction a roomy, clear inferior meatus is not all that is necessary for proper respiration; we should see always that the upper portions of the nasal chamber are also in an equally good condition. Of all the cases presenting themselves to the specialist those suffering from acute coryza form a large contingent. It is a remarkable fact that the starting point of these coryzas is usually in the remnant of Luschka's tonsil. I have time and again observed patients who knew that a coryza was about to develop from their sensations "just back of the palate." They described them as a sense of fullness and slight stiffness on swallowing. To express it in another way, the point of infection was located in that part of the nasal passage and the inflammatory process spread either forward, downward or in both directions. Attending to this point will at times ward off coryzas in persons whose attacks are usually severe enough to put them to bed. Every medical man has his own method of treating these head colds, and I merely mention that I have found among the most useful remedies, *Apocynum cannabinum* 3x dilution on tables and *Chininum arsenicosum* 2x trit., altednated every hour. They should be given at as early a stage as possible. Locally for the post-nasal congestion a good, satisfactory application is—

℞. Fluid Extract Eucalyptus,
Glycerine ..... equal parts.

In order to employ this thoroughly, wrap a piece of cotton around the end of a probe in such a way that one-half of the twisted cotton is bent at right angles to the probe. Dip this in the solution and press down the tongue with a depressor. The tip of the cotton is inserted

just behind the posterior pillar of the palate. If the parts contract in such a manner as to prevent its further introduction, ask the patient to close the mouth and breath through the nose; this allows the palatial region to relax and the cotton is quickly pushed into the space behind the palate. The cotton is gently moved from side to side, pressing it against the posterior wall. A class of cases that give the specialist a great deal of trouble are those who merely complain of a constant dropping or a post-nasal discharge, which resembles a solution of clear starch. Examination of many of these patients does not reveal any special cause for such over-production, and after the persistent use of spray solutions and the application of all kinds of medicaments, together with the indicated remedy, the secretion still provokingly continues. These cases are the forms of catarrh that wander from one doctor to another without obtaining any relief. Making every allowance for constitutional causes, I believe that some day we shall trace the source of these discharges to the accessory cavities—most probably to the posterior ethmoidal cells or to the sphenoidal sinus. If so, that would explain the utter uselessness of the nasal spray and astringent applications to the nasopharynx. At all events it will do us no harm to consider the possibility of this view being correct, and it may open up to us a method of reaching this peculiar and troublesome type of patient. While on this subject of nasal obstruction, it may not be out of place to call attention to the fact that some children who present the classical symptoms characteristic of adenoids are sent to us for operation, without their having the post-nasal region examined, either by palpation or by inspection. Wyatt Wingrave[1] has especially studied this subject, and he finds that "excluding those forms of nasal obstruction readily recognized by anterior rhinoscopy, the morbid conditions symptomatic of adenoids and simulating their presence may thus be grouped: 1, Diminutive choanæ and nostrils; 2, low vault of the naso-pharynx; 3, paresis of the soft palate and pharynx; 4, vomerine crest; 5, distortion of the vertebral column; 6, retro-pharyngeal abscess; 7, webs and neoplasms. Under the title of "Faux Adenoidisme," the functional symptoms of what might be termed "adenoids when there are no adenoids" have been described by Natier[2] in an article in which he shows that in certain cases the external symptoms indicating the presence of adenoids may really be due to respiratory defects in a

[1] British Med. Journal, Sept. 28, 1901.

[2] La Parole, June 6, 1901.

neurotic subject. By attending to the general health and using properly regulated breathing exercises, the symptoms soon disappear. Unfortunately some successful cases of this kind prompted others to try it, and instead of removing the adenoid growths or other obstruction breathing exercises were substituted. In England they have become a society fad, and Sir Felix Semon* naturally asks on what grounds are breathing exercises expected to act beneficially in genuine hypertrophy of lymphoid tissue? If it is by the air being forcibly drawn over them, how is it, he asks, that in so many cases of much developed adenoids there are, at the same time, much-developed faucial tonsils? These latter are exposed to the air current, not for half an hour three times a day, as recommended by those who practice breathing exercises, but all day for many months, or even for years. Yet the enlarged faucial tonsils show no tendency to decrease under it, although in structure they are so similar to adenoids. The cases in which brilliant results are claimed for breathing exercises in causing the disappearance of adenoids doubtless occur in those instances in which there is only some temporary inflammation of the normal Luschka's tonsil—an enlargement which would have subsided under ordinary treatment. The time for enforced nasal respiration is after, and not before, operations for a growth which requires removal." The adenoid facies sometimes persist after complete removal of adenoids and the faucial tonsils, and in such cases the parents are not only disappointed, but may be easily persuaded that the operation was not properly performed. And now there is one other subject to which we might, with considerable profit, turn our attention, viz., pseudo-hæmoptysis of naso-pharyngeal origin. Cases of moderate degree of hæmorrhage often occur at a time when the physician is not at hand; he must, therefore, rely upon the statement of the patient. People usually have no idea of the source of the blood, not being able to tell whether they first coughed, retched or simply felt something warm in the mouth. If, therefore, the physician is called to a case of this kind a thorough examination of the chest should be made, and if nothing abnormal is revealed in that region the naso-pharynx should be very carefully explored. Botey,[1] who has made a special study of this subject, says: "Special literature does not sufficiently insist upon the occurrence of this form of hæmoptysis. Hæmorrhage from the larynx, base of the tongue, and pharynx are relatively

*British Med. Journal, Nov. 2, 1901.

[1] Annal des Mal. de l'Oreille, Jan., 1901.

infrequent compared to naso-pharyngeal bleeding. The source of the blood seen upon the pharyngeal wall can be determined if you will clean the wall with cotton carrier and then apply a fresh carrier behind the palate, when it will be covered with fresh blood. Bleeding in the vault is favored by close attachment of the mucousa to the parts beneath and the comparatively poor protection of the epithelial layer. The use of cotton, as above described, together with the employment of the mirror, renders diagnosis easy." With this latter statement I cannot agree entirely, as there are cases in which it is very difficult to decide promptly and positively concerning the source of the bleeding. Thus David Newman [2] published six cases in which hæmoptysis was at one time believed to be due to tuberculous disease of the lung, while ultimately it proved to be the result of a lesion in the upper air channels. These patients were under observation for three years or more, so that any error in diagnosis is almost entirely obviated. In each of these cases the bleeding point was at last discovered. Massei [3] has written an able essay upon the subject of chronic hæmorrhagic tracheal catarrh; Pisenti,[4] in the same journal for October, 1899, also describes two cases of tracheal hæmorrhage. A case of this kind occurred in my own practice and hæmorrhage was occasioned by the mere effort of turning on a spigot, which worked stifly; there had been for some days previously an attack of ordinary bronchitis. Examination of the lungs was negative and no bacilli were found in the sputum. The point which I particularly wish to emphasize is that hæmoptysis of non-tuberculous origin is not as rare as is supposed.

DISCUSSION.

Geo. B. Rice, M. D.: Dr. Shearer's interesting paper has touched upon many points which well deserve careful consideration and discussion. I am somewhat astonished that our colleague has not referred to Greville Macdonald in his consideration of the respiratory function of the nose, partly because Dr. Macdonald is good authority, and partly because of his Scotch name, which should, and I know does, appeal to Dr. Shearer's sense of kinship.

Dr. Macdonald, in 1899, carried out a series of elaborate and exhaustive experiments, and arrived at definite conclusions regarding the function of the inferior turbinated bodies in raising the temperature of inspired air. It was then found that upon shrinking these structures

[2] Archivii Laryngologia Italiana, Oct., 1898.

[3] Brit. Med. Journal, May, 1891.

[4] Ibid.

with Cocaine that the temperature of the inspired air was lessened from two to three degrees. This experiment would certainly indicate that during inspiration air did traverse the inferior turbinateds contrary to the conclusions arrived at by Parker.

I can most heartily agree with Dr. Shearer in his estimate of the drying effects of Menthol, Eucalyptol and Thymol, and I should also add that in my experience the use of Petroleum oil as a vehicle for medicaments is in itself drying to the mucous membrane of the nose.

Acute inflammation of the naso-pharynx is, as the author has said, frequently the beginning of a severe attack of rhinitis and of laryngitis. Singers dread these colds of all others, because of the tendency toward sudden transition from the naso-pharynx to the larynx.

This does not apparently take place by extension of the inflammation, for it would seem that the laryngitis was more often metastatic, the tissues between the naso-pharynx and larynx being not in the least affected. I have been always at loss how to explain this, and should much like enlargement on this subject from some of our members. I have found that Adrenalin 1-5000, applied frequently to the naso-pharynx, aided the internal remedy in aborting the inflammatory attack.

The two remedies mentioned by Dr. Shearer I have had no experience with, but shall be glad to try them. *Merc. bin., Kali bich.* and *Ammonium bromide* have done good service in my hands.

A case of hæmorrhage from the naso-pharynx, such as described by the author, has never come to my notice. I can well remember, however, being called to examine a patient suffering from supposed recurring hæmorrhage from the larynx, and was enabled to trace the source of the blood to the posterior portion of the right inferior turbinal.

Hæmorrhage from dilated veins in the glosso-epiglottic fossa I have frequently seen, and have often been asked to examine patients suffering from slight frequent hæmorrhages from the upper respiratory tract from supposed various sources, and have often failed to make a diagnosis. I do not know that it is very important that such a diagnosis should be made if tuberculosis can be excluded and the hæmorrhages are not profuse. In the case of hæmophilia bleeding may be profuse, but the hæmorrhage may also come from a great many different places and local treatment be absolutely unavailing.

It has been my fortune to see a number of such cases during my hospital service.

SYPHILIS OF THE OPTIC NERVE AND RETINA.

BY THOMAS M. STEWART, M. D.,

Cincinnati, Ohio.

THE opportunity of seeing many cases of syphilis of the optic nerve and retina does not come to the ophthalmic surgeon, unless he is either located at a resort such as Hot Springs, Ark., or has access to specific clinical material. In private practice the true history of the case is not easily obtained, so as to make the clinical diagnosis and classification an easy matter.

During the past year the author has followed the changes in retina and optic nerve of four cases, two of syphilitic retinitis and two of primary optic neuritis.

In the retinal cases the vessel walls bore the brunt of the attack. Small patches of scar tissue were seen, from time to time, in the vessel walls. These seemed to be coincidental to relapses. Here and there a vessel was found with its lumen entirely occluded; other vessels showed thickened walls and contracted calibre. Fine gray lines are at times noticed in the course of the vessels, beyond which the artery regained its color and size.

Treatment does not alter the foregoing changes produced by syphilitic retinitis. Neither the mixed treatment nor well-directed homœopathic treatment has made any impression in these cases. It is reasonable to suppose that similar changes also occur in vessels too small to be seen by the ophthalmoscope, leading ultimately to atrophy of the optic nerve and retina. Syphilitic retinal arteritis may occur alone, or it may accompany other specific changes in the eye. The urine in all these cases was normal. The first case of chronic-retinitis. The patient, a young man twenty-five years of age. Left eye shows numerous vitreous opacities. Region of macula shows destruction of retina and choroid. The arteries near the disc show here and there in their walls great patches, and remind one of the mottled appearance of a serpent's skin. Some of the vessels showed the gray line already referred to, beyond which the vessel continued its course, showing that the lumen had not yet been entirely obliterated.

It seemed to the writer that the mottled vessels are the earlier stage, and the gray line of almost obliterated vessel the second stage of the

changes worked by syphilis in the retina. The right eye was also involved in the same way.

The second case, also a young man, aged thirty. In this case the retinitis was diffuse in character.

Some papillitis; swelling of retina, and an exudate, seemingly from the retinal vessels. It looked like a grayish white prolongation from the grayish line marking the situation of the vessel, and out into the retina. Hæmorrhages were also present.

The third case was one of primary optic neuritis. This patient had had some trouble with the eyes for many weeks, and as it did not seem very bad he put off medical attention. The case was one of inflammation of the optic nerves. Vision reduced to $^1/_{100}$, visual field concentrically contracted. Outlines of nerves very distinct, vessels were unchanged.

The history revealed syphilitic infection fifteen months previously. Because of no other eye inflammation, and no involvement of retinal vessels, coupled with the fact that a low diet, baths and constitutional treatment restored the field and the visual acuteness, lead me to classify the case as one of primary specific inflammation of the optic nerve. In true papillitis greater prominence of papillæ, distended veins, lessened calibre of arteries and marked infiltration of optic nerve substance is noticed.

All of these cases, except the last one, suffered permanent reduced central vision.

Passing from the foregoing clinical detail it is interesting to note that syphilis, as shown by the retina, frequently attacks the blood-vessels, doing its greatest damage to the vessel walls.

Deyl, a Bohemian investigator, has studied the behavior of the end-arteries and of the beginning of the lymph-streams of the vaso-vasorum in the lymphatic glands; blood-vessels of the liver; placenta and umbilical cords, all of undoubted syphilitic taint. He found that in the small end-arteries changes ranging from a simple nuclear swelling of the endothelial cells to obliteration of the vessels takes place; that this process in different places is met with in different degrees of intensity; that the reduction in calibre or the obliteration of the blood-vessels may produce hæmorrhages; and that the periphlebitis depends on the lymph stream and produces dilation of the small veins.

These points seem to explain the appearance seen in various forms of retinitis syphilitica; mottled appearance of blood-vessels; the hæmorrhages, and the indenting of veins by crossing arteries.

Vaughn, of Hot Springs, Ark., has reported thirty-one cases of optic nerve and retinal disease of syphilitic origin, all coming under observation during one year. He enumerates them as follows:

Papillitis,	2	cases
Retrobulbar,	1	"
Neuro-retinitis,	3	"
Retinitis,	3	"
Chorio-retinitis,	2	"
Neuritic atrophy,	3	"
Genuine atrophy,	5	"
Primary optic neuritis,	1	"
Tabetic atrophy (syphilis in every case),	11	"

These cases were among one hundred cases of syphilitic eye disease of all kinds. Hence Vaughn would on this basis say that thirty-one per cent. of syphilitic eye troubles are of the deep-seated nature, involving the retina and optic nerve. He has found a large number of cases showing a hyperæmic condition of the optic nerve entrance, some having a syphilitic history and some not.

Other observers note this same hyperæmic condition of the optic nerve entrance, but it is not always possible to show relationship between the nerve hyperæmia and the constitutional disease, excepting in those cases in which constitutional treatment is followed by a relief in all the symptoms, including the optic nerve hyperæmia.

It is interesting to note that intracranial syphilitic changes are considered by such observers as Uhthoff and Marz to be extremely rare. Nevertheless when the true papillitis of intra-cranial disease is not present, viz., the much swollen papillæ and enlarged and engorged veins, Horstmann would classify the case as a primary trouble. In his syphilitic cases of primary optic neuritis, he noted only slight cloudiness of the borders of the papillæ, and the dimensions of the disk were never markedly increased. Concentric contraction of the visual field is found in primary optic neuritis; in neuritis descendens there is central defect of visual field.

So that from the cases observed by Vaughn, by Horstmann, by Alexander and others a true primary optic neuritis has occurred. And there is no good reason why such should not be the case, because there is no characteristic property of the optic nerve to exempt it from becoming

primarily diseased, just as any other tissue or organ may be primarily diseased.

DISCUSSION.

W. W. Irving, M. D.: Dr. Stewart has covered his subject so thoroughly there is not much to add to that already stated. The cases reported are all characteristic of the various forms of this disease, and he has been fortunate to find so great a variety in so few cases.

My own observations correspond with those of Dr. Stewart, although, in the first case reported he fails to mention whether the dust-like cloudiness of the vitreous, supposed to be characteristic of chorio-retinitis, was present.

There is very little to distinguish these cases from non-specific serous retinitis, except, perhaps, localized spots of œdema. A positive history of syphilis is essential to a correct diagnosis; and this Dr. Stewart was able to secure in each case. A favorable response to antisyphilitic treatment would confirm a doubtful diagnosis.

The white lines, mentioned as following the course of the blood-vessels, are described by Fick as "An ophthalmoscopic picture of a round cell infiltration in and along the vessel walls." Haab concludes there is no cloudiness of the retina unless there is complete occlusion of the blood-vessels.

It would be interesting to learn the length of time from the primary lesion to the beginning of the eye symptoms in all the cases reported.

Howe, of Buffalo, considers the prognosis in these cases more favorable than retinitis from other causes.

E. J. Bissell, M. D.: Cases of this disease are not very common in private practice; yet I had the peculiar experience three months ago of having four cases come to me in three weeks. They were all cases of optic neutritis due to syphilis. The merging of such cases into disease of adjacent parts of the ocular tissues is very frequent, but in all of these four cases the affection of the optic nerve was predominent. The primary sore had occurred from six to seven months before.

T. M. Stewart, M. D.: I have very little to add in closing. I wish that I had made drawings and brought them with me in order to give a proper idea of the mottled appearance of these vessels. It is difficult to give a correct idea of it without. It was an appearance that I had never seen before so perfectly. The little branches and the white flecks that would run off from the arteries bothered me for a while. One of the difficulties that I find in my practice is to get a clear clinical history that makes one certain that it is really syphilis that you have. No matter how much the opacities in the vitreous were like those described as belonging to syphilis, I should hesitate to ascribe them to that disease unless I could also get a history that would warrant the diagnosis. The main difficulty is to get a clear history, and that is the reason that I reported these cases. The mixed treatment is of some help in making the diagnosis.

THE CALCAREAS IN DISEASES OF THE NOSE, THROAT AND EARS.

BY T. MORRIS STRONG, A. M., M. D.,

Boston.

WE do not present anything new in this paper, but hope that by gathering together for ready reference the subject matter on the calcareas scattered through text-books and journals their application may be the more readily differentiated and something tangible result. We cannot safely deny the accusation that the mode of practice of many of us is routine, empiric, or, worse, careless and ignorant. It might be well if our society should each year select one drug and have every member pledged that, no matter what might be his usual custom in recording his cases, whether in full detail, or partially, or not at all, for this one remedy, when prescribed, the fullest details should be given and the results noted. From this we think might come some reasonable deductions as to the efficacy of the remedy and its field of service be accurately determined. The sources of this compilation are the well-known text-books of our school, the files of our journals, and special articles by Drs. A. Worrall Palmer, Wm. E. Rounds and Geo. B. Rice.

All of the carcareas affect the nutrition of the body, acting on definite systems, hence their frequent use, as we know, in infancy and childhood. Their influence is felt upon the enveloping membranes of the body, serous, mucous, cutaneous and upon abnormal conditions of bone. The Carbonica and Phosphorica cause anæmia when pushed to the extreme. All affect the glands.

It is not always easy to differentiate the Calc. carb. and Phos. The constitution states are usually of more importance in their application than the specific local conditions. In general the carbonate is suitable for lymphatic constitutions, leuco-phlegmatic temperaments, venous hæmorrhoidal characteristics; a nutritive agent aiding organic processes. Of special service is the developmental periods in nutrition affecting the vegetative systems so that under its influence secretion and absorption progress rapidly. Easily following this comes an influence over the glands, and they take on pathological changes and de-

posits, the cervical chain being markedly affected. Catarrhal conditions in children, with tardy dentition or after appearing quickly decay, and in women, the latter in the early periods of menstruation and the climacteric. Frequently indicated in cachexia leading to various forms of consumption. In states of malnutrition, with large appetites, but emaciated, the food does not seem to assimilate (Iodine). Patients particular susceptible to external influences, as currents of air, cold, heat, noise and excitement.

The Calc. phos. also has a powerful influence over defective nutrition, but it is more marked in the bone degeneration, with a scrofulous dyscrasia; a nutritive stimulant, exercising marked influence over cellular processes.

CALCAREA CARBONICA.

Nares.—Pain over the root of the nose, with intermittent swelling. Wings of the nose red, inflamed, thickened, nostrils sore and ulcerated (graph, the borders of the nostrils crack easily and become sore, scabbing over, but the discharges are generally offensive). Dull pressure in the forehead, down the nose (general bruised feeling with nausea). Violent pressive headache in forehead. Stitches in left forehead and ear, with sore throat on swallowing (last three symptoms recurring in provings). Excessive redness of mucous membrane of the nose and throat, with great sensitiveness to local applications (not a congestive or a chronic venous hyperæmia, but rather an evenly diffused heightened color). Dryness of the nose at night, often moist during the day. Stoppage in the morning on rising, which may be with, or without, sneezing. Sneezing frequently associated with catarrh, which is fluent, clear and watery, and often accompanied with headache. Obstructive hypertrophic rhinitis, turbinated tissues, pale and puffy, with mucopurulent discharge, usually profuse, often streaked with blood, or if scanty there is a sense of dryness in the naso-pharynx. Catarrhal irritation extending from nostrils to the air passages, with hoarseness, associated with sour, rather than offensive, sweating about the scalp and feet, or partial sweating of other parts of the body. (Sil. has a more profuse sweating about the head and neck, and if lightly covered becomes quickly warm; sweating more towards morning; perspiration which makes the feet sore or raw; more sensitiveness to touch than the Calc. carb. patient). Head hot and mouth dry at the beginning of catarrhal attack. Profuse dropping of water from the nose. Stoppage of nose, with later discharge of thick, yellow pus. Post-nasal dis-

charge thick, jelly-like, tough (Hydras. thick and tenacious, Kali bi. ropy mucus and solid chunks, Merc. prot. mucus, causing hawking).

Chronic ozæna, with purulent, fœtid, thick or yellow-red discharge, making the lip sore, corrosive, with ulceration; swelling at root of nose; red, itching pustules on the upper lid and cheeks (Merc. sol., corrosive, greenish, fœtid pus, with gluey consistency; Kreos., Kali iod., discharge greenish-yellow, excorciating, especially when of syphilitic origin). Soreness and ulceration of septum. Sore ulcerated nose, either very dry or swollen and plugged by decomposing mucus, with impaired sense of smell and occasional nosebleed. Subjective offensive odor, as of rotten eggs, gunpowder or manure.

Nosebleed in the morning (Bell., active hæmorrhage on waking, blood feels hot; Bry., on rising, not frequent through the day; Carbo veg., frequent and easy, from vitiated state of system). Inclination to nosebleed in fat children.

Neck and Throat.—Pain in nape of neck, with stiffness; shooting, throbbing pain in right frontal protuberance; pain in middle of forehead. Scrofulous enlargement of lymphatic glands of the neck, hard and firm, yielding slowly to treatment.

Difficulty of swallowing, as if tongue behind was swollen. Pain in throat, extending to ears. Swelling of palate, uvula and tonsils, with sensation as though the throat was contracted or narrow when swallowing, inflammatory spasms (Bell., throat dry and inflamed, but with exaggerated reflex sensibility). Spasmodic contraction of pharynx (Apis, Hepar sulph., Nitric acid). Swallowing difficult from lump in the throat. Feeling in pharynx in afternoon, as if something stuck in it, with nausea (Zinc.). Dilated veins in soft palate and pharynx, giving rise to bluish tinge. Mucous membrane of throat and naso-pharynx congested, œdematous and relaxed, secreting a large quantity of dirty, white mucus. Patulous induration of soft palate.

Faucial tonsils very large, pale in color, soft to touch. The pharyngeal tonsil soft and bleeding easily on the slightest touch of probe or finger. Tonsils aphthous or ulcerated, hardened or enlarged; whitish, yellow spots on tonsils.

Larynx and Trachea.—Chronic inflammation of larynx and trachea, especially in the upper portion of the latter. Thickening of mucous membrane in scrofulous subjects. Irritation along entire upper respiratory tract. Whistling in the larynx after lying down evenings. Roughness or rawness in the larynx. Painless hoarseness, so that she was unable to speak, aggravated morning (Phos., aggravated evenings).

Voice weak. Raw feeling in larynx, with thick, jelly-like or tough discharge. The cough symptoms are rather noticeable from the fact that the conditions calling for this drug are apt to occur in young girls about puberty, or a little later, when the concomitants seem to threaten approaching tuberculosis. There are fugitive pains and distress about the chest, with raw feeling in larynx and naso-pharynx. Later dry tormenting cough, chiefly at night, raising only after long and great efforts; scanty, white, frothy, gluey or dirty-looking putrid sputa; looser in the morning. Or dry cough at first, with later profuse, salty expectoration, with pain, as if something was torn loose from the larynx. Cough, with rattling in chest, or in the morning with yellow expectoration. Cough at night, aggravated from inspiration (Corallium rub., as though icy cold air was streaming through the air passage) or from sensation of plug in the throat and moved up and down. Tickling cough, as from a feather in the throat (Bell., cough from tickling in the back of larynx; Sulph., with rawness in the back of the larynx; Phos., from tickling in throat, with hoarseness and sensitiveness of the larynx when coughing; Caus., aggravated in morning). Dry cough after midnight (Ars., night cough, must sit up), so that head and arteries throb. Hacking cough in evening, aggravated in bed, with mucous expectoration, but during the day the cough is dry (Hyos., cough as soon as he lies down, ameliorated sitting up; Puls., at night when warm in bed; Rumex, lying down, but irritation is at sternal notch or lower.)

"Dyspnœa, palpitation, rush of blood to chest on ascending, and even hæmorrhages from the lungs; fever aggravated in the evening, with partial sweat and soreness of chest to touch, aggravated beneath the clavicle, is an accompanying picture to the above. The patient is scrofulous and fat, and the past history shows well-marked symptoms of Calc. carb., such as slow developing childhood. With Phosphorous, on the other hand, the patient is slender and overgrown, tall for her age and narrow-chested. She has a fine grain of tissue, rather than fat and coarse, as in Calcarea."—(Farrington.)

Ears.—Shooting pains in left ear (with pains in isolated joints and spots). Pressing out pains in ears. Sharp twitching in ears, occurring frequently, and sometimes causing the whole body to start up. Singing, roaring or crackling in ear. Stitching, tearing pains, with burning and itching. Sharp, shooting pains when blowing the nose. Sensation of heat, or as if hot air was rushing out. Cracking in the ear when chewing. Pain in internal ears; first right, then left; aggravated

by extreme heat or cold, blowing noise on coughing. In scrofulous children inflammation of external ear or auditory canal, as also middle ear and cavity of tympanum. Pain and deafness when blowing the nose, but passing away when swallowing. Loud sounds in the ear, and with pain, if any, of a pulsating character. Calc. produces thickening of membrana tympani, with defective hearing, humming, roaring and buzzing in the ears, dependent upon the abnormal pressure of the chain of bones.

"The cases calling for Calc. carb. are those in which a certain form of enfeeblement of hearing exists in boys and girls, from ten to fourteen years of age; at least it is most generally noticeable at this age, and if not then taken in hand there does not seem to be much use in treating it. The parents will say they thought nothing of it until they went to school. In these cases there is nothing to make one believe in their non-congenital origin, except the fact of the disappearance on the administration of the remedy. The cases are distinct, definite, unmistakable, and the remedy sufficient, satisfactory, reliable, and, as far as a remedial agent can be, unerring."—(Cooper.)

The otorrhœa has a sort of pappy or fatty appearance. It is purulent, but it also has a pappy appearance, like chewed-up paper. When a view can be obtained of the membrana tympani after cleansing, we will find old perforation, the edges thickened and granular, bleeding easily when touched, with perhaps tendency to formation of polypi. Pains sudden, jerking, pulsating in character (compare Hepar, Merc. sol., Sil.). Chronic suppuration of the ear in strumous subjects. Coarse sounding tinnitus of a rhythmic variety, owing to the pulsations of congested vessels in the tympanum and adjacent to it; the profuse discharge from the ear is white, flaky and caseous, of a cheesy odor, and the walls of the canal are white and macerated. Pinky, flabby tympanic mucous membrane, with large pale granulations, bleeding easily when touched; ulceration of the mucosa and caries are frequently present, and the patient has the appearance of marked dyscrasia.

In the chronic otorrhœa of children it is especially useful, where the patient is large, fat, flabby, and the discharge is bland, yellow and not very offensive.

Silicea frequently follows Calc. when the tympanic ulcerations become indolent and fail to improve under the latter drug.

CALCAREA CAUSTICA.

We find the following in the Drug Pathogenesy, but have no clinical records of its use:

Violent shooting, tearing pains in left Eustachian tube, extending to meatus auditorius internus; tearing up right temple. Shooting pains, right eye to frontal protuberance. Stitches in course of left supra-orbital and supra-trochlear nerves. Coryza in left nostril; confused head, with frontal pains. Rheumatic pains in right maxillary joint when pressed. Hawking up granular viscid stuff (like boiled rice), which accumulates. Frequent violent pain in forehead, region of frontal sinus and temples. Mucus in throat difficult to hawk up, almost vomiting. Pressure and heaviness of eyelids; pain in occiput, involving the whole head. Stiff neck, with mucus in throat, as above.

Shooting in the larynx; hoarseness, with feeling of roughness in windpipe, cough. Vertigo and severe cough; mad feeling in the head. Bloody expectoration, with hoarseness. Stitches in chest, pains in throat. Burning in fauces and œsophagus, with dryness of mouth. Slight redness and varicosis of the mucous membrane of lower lip.

CALCAREA FLUORICA.

Congenital hereditary syphilis, manifesting itself in ulceration of mouth and throat; caries and necrosis, with burning, boring pains and heat in parts; discharge of thin, acrid, ichorous mucus.

Copious, offensive, thick, greenish-yellow discharge, with osseous growth in nose; blowing of quantities of mucus from the nose, with ineffectual desire to sneeze.

Hypertrophy of Luschka's tonsils and accompanying hypertrophies of mucous membrane in posterior portions of nares, so often found in infancy and childhood.

Frequent coughs morning, with thick, yellow expectoration; feels weak in mornings.

"Caries of malar bone and fangs of teeth, oozing dark, offensive, bloody fluid; surrounding tissues purple; later swelling of bone on outer surface." (Sil. and Flour. ac. had failed to improve.)

Relaxed uvula when the tickling is referred to the larynx.

Calcareous deposits on the tympanum.

For osseous tumors and enlargements of bone, with or without caries, particularly when of traumatic origin.

CALCAREA IODIDE.

A nutritive alterative in children, with rachitic and other strumous disorders. In atrophic and paretic conditions of the pharynx, with chronic nasal catarrh. Where the assimilative power of the tissue for lime seems to be deficient.

Dull frontal and temporal pains, with sharp, shooting aggravations.

Pharyngeal mucous membrane thin, glazed, shiny and anæmic.

Muco-purulent discharge (Calc. carb.), rather profuse posteriorly and scanty anterior.

Red nodular hypertrophy of tonsils, of considerable hardness (Calc. carb., large and soft; Calc. phos., small and hard); catarrh of throat, with frequent and persistent attacks of hoarseness (Calc. phos. has a cough, but hoarseness is not markedly persistent); similar enlargement of all glandular tissue in this region, e. g., Luschka tonsil, supernumerary and lingual tonsil (Baryta carb.).

Enlarged tonsils, presenting a ragged appearance from the numerous crypts and diseased follicles, which indent the surface.

It frequently benefits laryngeal spasms, atrophic pharyngitis, laryngitis in scrofulous subjects, when the most noticeable symptom is the hard enlargements of lymphatics, both in cervical region and elsewhere.

Fibroma of right parotid region. (Clinical case—Winslow.)

Ears.—When the discharge is thin and excoriating, with the enlargement of the glands about the ears; exuberant granulations; when the glands of the throat are hypertrophied and the patient suffers from hypertrophic nasal catarrh, with scanty ichorous discharge from the nostrils.—(Rounds.)

When the mucous lining of tympanum is indolent, with a more acrid pus and greater swelling of the lymphatic glands in thin, dark patients, and where the other calcareas have failed.

CALCAREA PHOSPHORICA.

In defective nutrition, slow mental and physical development; strumous cases. Often serviceable where the symptoms seem to call for Calc. carb or Phosphorous, combining as it does the alterative and nourishing properties of lime, and the nutritive and stimulating properties of Phosphorous. In questions of doubt, the anæmia and nervous irritability present will decide the Calc. phos. in place of the Calc. carb.

Nares.—Headache ameliorated by sudden sneezing, leaving sense of soreness in the nostrils. Headache of school girls; sensation of ice lying on upper part of occiput. Pressure at root of nose, with frontal headache or supra-orbital pains on one or both sides, particularly if involvement of the ethmoid or frontal sinus is feared. Mucous membrane pale and relaxed (Calc. carb. the opposite), or fungous, flabby and ulcerated. Mild mucous discharge mixed with crusts and occasion-

ally with blood. Chronic catarrhal discharge in anæmic subjects. Languor is a frequent accompaniment of the catarrhs and influenzas, with sensation of emptiness, weakness or sinking. Coryza fluent in cold room; stopped in warm air and outdoors. Icy coldness of end of nose. Nosebleed in afternoon; pure partly coagulated blood. Nose swollen, with soreness of edges of alæ. Polypi gray in color, bleeding easily.

Naso-Pharynx.—Roughness of the throat, with difficult deglutition. Sore, aching on swallowing; burning from surrounding parts toward throat. Mucous membrane thickened. Dryness and burning during empty swallowing, and in swallowing first mouthful, aggravated if one has not spoken or swallowed for a short time (Canth., burning on deglutition extending downwards; Actea rac,, empty deglutition, painful). Sore throat, with tickling cough in the evening; worse after going to bed. Kind of contraction in throat, as after much weeping or after running. Sore throat in morning on waking, aggravated right side, low down in back of fauces, ameliorated by swallowing, disappearing during breakfast. If patient catches cold it is associated with dryness and soreness in the throat, the faucial tonsils, pharynx, larynx or bronchi receiving the brunt of the attack (in Calc. carb. it is the catarrhal conditions which are aggravated); stitches in the throat and chest; heat in the upper part of chest and arms. On empty deglutition, sensation of having swallowed uvula, and it was adherent to posterior wall, causing choking, only ameliorated by again swallowing; palate relaxed. Fullness of throat, either sensory or due to presence of bloody mucus. Naso-pharyngeal discharge is more tenacious than profuse: patient continually clearing the throat, to rid the larynx of its viscid secretion. Discharge of yellowish-white, thick mucus; downward passage of scabs in pharynx.

Pale, flabby hypertrophy of tonsils, with perhaps ulceration in spots or chronic inflammation and hypertrophy of pharyngeal follicles, accompanied by other glandular enlargements in young persons of strumous or lymphatic constitutions. Chronic tonsillitis, with inflammation of middle ear; throat hurts more from swallowing saliva than food or warm drinks (Merc. sol.). The tonsils, if hypertrophied, are smaller than the other calcareas, and offer greater resistance to the probe; the Luschka tonsil similar, both being of a more natural color than Calc. carb.

Larynx.—Hoarseness and cough, day and night. Cough, with yellow expectoration, aggravated in the morning, with fever, dryness and

thirst. Tubercular cough, with soreness and dryness in throat. Hoarseness and cough, with stitches in the chest. Suffocative cough of children, ameliorated lying down, aggravated sitting (Bry., similar cough, aggravated by motion). Suffocative fits in children after nursing, aggravated after crying and being removed from the cradle; head thrown backwards, face blue, fighting with hands and feet; attacks followed by relaxation, frequent short difficult breathing (Brom., Hepar Sulph., Kaolin, Lob., Spong.).

Said to have caused absorption of papillomata, fibromata and fibrocellular tumors.

Ears.—Dermatitis of the auditory canal, with serous exudate, almost odorless, whitish epidermic scales and sebaceous matter, moist, soft and pultaceous, lying in the canal; meatus, red, swollen, irritable, itching, hot; ear sensitive to cold and patient has mucous and glandular troubles generally. Stuffed feeling in the ears, with considerable deafness, but rarely any tinnitus; inflation easy, causing bubbling rales and immediate improvement in hearing. Aching, tearing pains about the ears, with ulceration around the auricles. Difficult hearing, singing and noises in the ears. For tubal and tympanic catarrhs in children and strumous youth.

When a patient is suffering from a wasting disease, gradually losing flesh, with a thin, offensive discharge from abundant granulations in the drum cavity, I have never known the Phos. of lime to fail to produce beneficial changes. The Calc. hypophos. is preferred as being particularly adapted to the treatment of suppurative inflammation of the middle ear in phthisical subjects."—(Rounds.)

In this drug there is a general aggravation from wet and dampness, causing a feeling of general aching and soreness, particularly when the child is moved or on motion (not a Bry. case).

In the scrofulous diathesis, with flabby, shrunken, emaciated frame and general malnutrition.

CATARACT EXTRACTION.

BY FRANCIS B. KELLOGG, M. D.,

Los Angeles, Cal.

PROBABLY every oculist of experience has his own method of extracting cataract, which differs in some particulars from the methods of others. My own experience has led me to follow in nearly every instance a certain course, which is enough of a departure from the ordinary to warrant description.

In adopting this line of procedure I have had two objects in mind. 1st. To extract with the least danger of reaction. 2d. To secure the best possible vision.

These two aims are co-related, in that the occurrence of inflammatory reaction is generally followed by impaired visual results. To avoid for the patient, however, the tedious torture of an iritis following extraction, is sufficient reason for the adoption of any method which will accomplish that end. In the matter of preliminary preparation let me say that I instill into the eye one or two drops of a one per cent. solution of atropia about fifteen minutes before operating.

In both the iridectomy and the extraction I make use of Parke, Davis & Co.'s adrenalin chloride 1-1000. From one to three drops will prevent bleeding into the anterior chamber. This is a great desideratum, as it keeps the field of operation clear.

In considering the question of iridectomy I cannot feel justified in giving weight to cosmetic considerations. The safest way is the best way, and will give the best visual results in the long run. In my opinion there is less danger of complications and hence a better prospect of the best vision, in the operation with iridectomy than in the so-called "simple operation." I therefore feel it my duty to give my patients the benefit of the safer method, and hence make it a routine practice to do an iridectomy.

Again, I have never had a single instance of an iritis after a simple iridectomy done with the lance. I *have* had several cases of severe iritis following an iridectomy combined with extraction. I have, therefore, in my more recent cases made my iridectomy a month previous to

extraction. Knapp argues against preliminary iridectomy that it makes two operations instead of one, and thereby doubles the chance of accident or disturbance. In my experience the facts are exactly the opposite. In doing a small iridectomy with the lance there is scarcely a possibility of reaction. On the other hand, the cut iris has time to thoroughly heal before being subjected to the violence of extraction; therefore, it seems to me that the possibility of reaction is lessened rather than increased by allowing an interval to elapse between iridectomy and extraction.

There is another reason for doing a preliminary. It not only paves the way for extraction by securing therefor the most favorable mechanical conditions, but it serves for the patient as a kind of rehearsal for the more serious step. The entire absence of pain or disturbance attending the iridectomy is a most powerful re-assurance to the patient. Acquaintance with the speculum and the knife is formed in a way which robs them of the terrors of the unknown and makes them regarded without dread when it comes to the extraction proper.

I am inclined to abandon the cystotome as an instrument for opening the capsule. I look upon this little step as the most difficult and critical in the operation. It is a too common experience with the cystotome that the capsule is not completely opened, delivery is obstructed and lens matter already harrowed up by the cystotome is left in the eye. I have found that by using the point of the cataract knife I can make a clean cut into the anterior capsule of the lens parallel to the corneal incision. I then with the same knife make a central vertical cut in the capsule, uniting with the curved incision at its middle point. I hold in this matter that a clean cut is better than a scratch, and experience has so far borne me out. Care must be taken, however, not to allow the point of the cataract knife to become dulled against the speculum, as happened in my last case. Even then it opened the capsule better than the cystotome. In doing cystotomy with the knife one little point is of importance. Gentle pressure is made against the lower third of the cornea with the Daviel spoon. This pressure upon the lens renders the capsule tense and favors a clean cut by the knife.

After the expulsion of the lens and removal of the speculum the eye is given a few minutes rest, during which time there is a rapid generation of aqueous to meet the unusual loss. Firm pressure upon the cornea now will cause the incision to gape, and the aqueous to gush out, carrying with it whatever of lens matter may have been left behind. It does another thing. If the iris has been carried into and in-

carcerated in the incision it is freed and the necessity of reposition with the spatula is frequently done away with.

With the extraction thus completed the next step is usually to bandage the eye or close by compress with strips of plaster. This is just what I believe should not be done. I thoroughly approve of the open-eye method of after-treatment in cataract extraction, advocated before this society at its first sessions, in a paper by my lamented friend and colleague, Dr. Hayes C. French. I have adopted this method during the past year and am coming to regard it as a most important step forward. The closed lids are the natural, and the only natural covering for a wounded eye. Any foreign substance loaded upon them can only cause pressure upon and danger to, the incision. The palpebral reflex can be depended upon to keep the eye closed, and any slight movements which the lids make exert a favorable rather than an unfavorable influence in keeping the incision freed from mucus and assisting the tears—the natural antiseptic colyrium, in keeping clean the cut tissues. Especially do I deprecate the use of a bandage. It is quite likely to drag upon the compress and add to the mischievous tendency of the latter. I cover the operated eye with a transparent celluloid shield, designed for workers in iron and steel mills. It is detached from its fellow and adjusted over the eye with strips of plaster. Thus the eye is protected from external contact and still can be inspected.

In order to remove as far as possible all inclination to the lids, I *do up the unoperated eye* with compress and plaster. It is evident that if the unoperated eye is opened there is an attempt of the lid of the fellow eye to follow, and the effort to keep it shut is more or less spasmodic, which increases the tension of the lids. The compress is removed at the end of twenty-four hours. The patient is kept in bed for two or three days, but is instructed to turn freely upon the unoperated side to rest the back.

About one month after extraction I make it a routine practice to make an opening in the posterior capsule. I always prepare my patients for this final step in advance. In all cases the opening must add something, be it ever so slight, to the visual acuity, and the principle which guides me is that the patient is entitled to the very best vision obtainable.

Discision of a secondary membrane may be, as I have learned to my sorrow, followed by severe iritis when done with a single needle. An early lesson in this direction decided me to use the double needle procedure in all cases. It is difficult to see how it would be possible for

reaction to follow this method of discision, and in my hands it never has. I have come to regard it as perfectly safe.

By following the above course I have been able in all my cases except one, of uncomplicated cataract, to secure practically normal vision. $^6/_9$ has been my poorest record, and several of my cases have scored $^6/_6$ with their correction.

DISCUSSION.

F. M. Gibson, M. D.: In the whole range of eye surgery no other operation which in uncomplicated cases is so simple, has elicited so much discussion and had so many variations described, as the one which is the subject of this paper.

None can doubt the advantages to the operator in his manipulations of having had the privilege of making a preliminary iridectomy; also, there is no question of the lessened probability of inflammatory complications. But leaving out of discussion cosmetic considerations, even when the iridectomy is narrow, visual results must be interfered with somewhat from dazzling, as is generally conceded, although the cases here cited show unusually favorable results by whatever method.

The use of atropine as a preliminary step in the operation, is in my opinion and experience good, and one which I have followed for some time, making the work much simpler, allowing the extraction to be done with less bruising of the iris, and in some degree affording the good results which are to be derived from a preliminary iridectomy.

The use of adrenalin simplifies an iridectomy, but I do not understand why it should be necessary at the operation for the removal of the lens, unless a conjunctival flap is made, which is so seldom done now.

The method of opening the capsule is certainly much better than that with the ordinary cystotome, as one is never certain that the tiny point is sharp and will make a satisfactory opening; but it occurs to me that a broad knife-needle would here be an improvement on the ordinary cataract knife, as affording a reliable and sufficient cutting point and surface, and being more readily manipulated through the corneal opening.

The matter of dressings has been so variously discussed that it seems that there are almost as many varieties as men who apply them, but certain advantages of the open dressing seem to be emphasized from year to year, and whereas there is always more or less hesitation in leaving old and tried methods, one much be open to conviction from superior results and not the last to lay the old practices aside.

I have recently been using a partial mask of woven wire, putting only sufficient dressing under this to insure closure of the eyes, and have had very satisfactory results from the method.

ACUTE HOARSENESS OF SINGERS AND PUBLIC SPEAKERS.

BY E. D. BROOKS, M. D.,

Ann Arbor, Mich.

TO one who gains a livelihood by the use of the voice in singing, lecturing, preaching or as an impersonator or barrister, a speedy recovery from an attack of hoarseness means much; next thing, in fact, to the ability to ward off such an attack.

The delicate and intricate mechanism which has to do with the production of that divinest of all sounds, the human voice, must be perfect in all its parts or the tone will be faulty in quality or power. From the crown of the head to the sole of the foot there must be no unsoundness in the artist who would stir the hearts of his hearers. Imagine the effect, in the midst of a tender love song or a climax of oratory, of having to belch a quantity of gas from the stomach, or of a sudden twinge of pain from gout or rheumatism or colic. The artist must be able to forget self and to throw his whole being into his song or speech, and how can he do this with a pain here or a feeling of weakness there, to distract his mind and keep it down to the baser realm of things gross and fleshy?

Moreover, the whole mechanism of breathing and of tone production, from diaphragm to sphenoid sinus, must be in perfect condition, structurally and functionally, while the general health must be kept in prime condition, for the whole chain is no stronger than its weakest link, and the foundation of strength in the special organ is in the perfect balance of the general system.

The consideration of some of the causes that are instrumental in bringing on an attack of hoarseness will be helpful in arriving at a course of treatment, prophylactic or curative.

Whatever tends to lessen vitality or lower resisting power, either of the whole system or of the special organs under consideration, may well rank as a predisposing cause of hoarseness.

We shall include in this category all vicious habits and indulgences; excesses; dissipation of any sort; intoxicating drinks; narcotic stimu-

lants, especially tobacco smoking; over-eating; lack of sufficient quantity of wholesome and nutritious food; irregular hours for eating; sleeping in ill-ventilated rooms, or with too light covering; inappropriate clothing, either too light or too heavy; insufficient exercise; keeping late hours; faulty methods of using the voice, and the numerous practices and exposures incident to the life of one who travels; all these things lessen the ability of the system or any of its parts to ward off disease, and hence may be classed as predisposing causes of hoarseness.

The most frequent exciting cause of hoarseness is exposure to cold. The victim, while the body is in a glow of warmth, sits or stands where a current of air, not necessarily very cold, strikes some portion of the body, sits on a cold surface or stands on cold or damp ground; slight shivers run up the back, the surface of the body becomes chilled, the blood is forced from the surface, the mucous membranes become engorged, active hyperæmia quickly followed by inflammation ensues and the mischief is begun. The larynx may or may not be more extensively affected than other organs, but whether it is or not it is put out of commission for the time by the thickening of the delicate lining membrane.

Second in frequency among causes in the class of people under consideration is overstraining the voice by too loud or too long-continued use, or by pitching the voice too high, thus straining the laryngeal muscles, especially the thyro-arytenoid muscle, part of the function of which is to increase the tension of the vocal cords. Not only is the strained muscle incapable of the proper performance of its function, but there is set up a degree of inflammation of the larynx which in itself would prove disastrous to the quality of the voice.

Open air speaking and singing, as in political campaigns and out-door evangelistic work, combines the two causes just mentioned to a ruinous degree.

The inhaling of irritating vapors, or of dust or smoke, is an occasional cause of hoarseness.

The person who depends upon the quality of his voice for a livelihood needs to live an abstemious life, which I fear not many are inclined to do, hence the blasted hopes and early wrecks among those of brightest promise.

As great emphasis is being placed upon preventive medicine now-a-days, and as homœopathists are in the van-guard of the medical profession, we will not fail to give our patrons proper instruction along that line. It may occasionally be heeded. We will warn them of the

causes that render them subject to attacks of hoarseness and instruct them how to avoid them. A little advice along hygienic lines will be in order, such as the need to dress according to the weather, changing the wraps to correspond with the temperature and humidity, remembering that it is comfort that must be sought, regardless of what people may say. We will not fail to inform them that a proper quantity of wholesome, nutritious food, neither too much nor too little, eaten slowly and not washed down with tea, coffee or other liquids, at the expense of proper insalivation, forms part of the prescription; that it must be taken at regular intervals, such as are established in every well-regulated household; that a cold sponge bath of at least the arms, chest and throat, followed by brisk rubbing until the skin glows, is a great help to the resisting powers, and should be taken every morning, as part of the toilet; that one of the many excellent exercisers in the market, or a punching-bag or pair of dumb-bells, vigorously used every day, is better than a brandy-sling or a dose of physic; that an hour's brisk walk after breakfast is a great tonic, and, above all, that one need not wait until he is confined to his bed before consulting a physician, but that Homœopathy can quickly, safely and pleasantly restore to health when the slight symptoms, that may be the harbingers of severe or even dangerous illness, are in that uncertain stage when no one can group them and give them a name more definite than "malaise" or "that tired feeling."

When, in despite of or from disobedience to our proposed prophylactic measures, a case of acute hoarseness presents itself for treatment, the patient must be confined to his bed, unless it is a light case, and we can be assured that our injunction to stay in a comfortably warmed, well-ventilated room will be strictly obeyed. Quay says he must be put to bed, and I am not sure but that such a course will insure the quickest results, though it has not been my practice to enforce it. The most speedy possible recovery of the use of the voice is sometimes of the utmost consequence, and in such a case the bed is the proper place until restoration is practically complete. Of course, the use of the voice during the attack, even in conversation, must be reduced to the minimum or altogether forbidden. The local inflammation will be benefited by causing the patient to inhale steam from a tea-kettle or other suitable dish, the spout being wrapped with a thick cloth to prevent burning the lips. The addition of a few crystals of menthol to the water has a soothing effect upon the tissues and is somewhat astringent. Inhaling a nebula of a 3% oily solution of camphormenthol may sup-

plant or be alternated with the inhalations of steam. During the first twenty-four hours of the attack the external application of ice or a cold cloth may serve to lessen its severity; after that time dry heat is most beneficial and hastens resolution.

The indicated remedy should be administered from the outset, and, as *Aconite* is oftenest indicated during the first stage of any inflammatory affection, and especially if caused by exposure to cold or by straining the voice, it easily and naturally heads the list. The mental symptoms of fear, anxiety and restlessness will usually be present to confirm the choice. Of course, no one would think of giving Aconite if another remedy is indicated by the totality of the symptoms present in the case.

Belladonna may follow Aconite, or may be the only remedy from the first, if the affection is distinctly right-sided, with headache, flushed face, bounding pulse and dread of noise, light and jar are present.

Ferrum phos. may supplant Aconite if the anxiety, fear and restlessness are wanting.

Causticum has aphonia complete or partial from paralysis or paresis of the abductor or tensor muscles, and is often accompanied by cough, with escape of urine, from paresis of the sphincter vesicæ; aggravation from east wind.

Mercurius has much soreness of larynx and trachea, with metallic cough in twin explosions; all symptoms worse at night, etc.

Phosphorus has aphonia, with sense of weight on chest; much soreness of larynx, which prevents phonation, and cough worse from cold air or attempt to use the voice.

If caused by straining the voice *Aconite, Arnica, Rhus* or *Cimicifuga* may be studied.

In every case a close individualization of the remedy will amply repay the prescriber, and he may find that remedy outside the above list and in one that has never been known to have hoarseness in its symptomatology.

Finally, don't let your patient return to the use of his voice until the last vestige of hoarseness is gone and the parts have resumed a normal appearance. Many a fine voice has been ruined by the hurry of the patient to return to his vocation and the want of Calc. phos. in the vertebræ of his physician.

DISCUSSION.

Chas. H. Hubbard, M. D.: Dr. Brooks has given us an excellent paper, and one has to search most diligently to find anything to criticise.

Though the writer has not attempted anything especially new, the

subject never grows old. Hoarseness is here presented to us as an abstract fact, a naked, unadorned fact, with little or no consideration of the pathology in detail. Certainly, none of us recognize hoarseness as a disease, but as the manifestation of some morbific process in the respiratory tract; realizing also that the initial lesion often resides in some remote part. Reflex neuroses play an important role in hoarseness of speakers and singers.

Patients complaining of acute hoarseness frequently insist upon immediate relief, the occasion seeming to demand it. Many acute attacks—so-called—are in reality sub-acute. Though the tone-producing structures may not have been so much involved as to seriously interfere with the use of the voice, still some chronic involvement of the parts often exists that invites the acute aggravation. As Dr. Brooks says: "The most frequent exciting cause of hoarseness is exposure to cold." But an intelligent recognition and proper treatment of the morbid condition during immunity from hoarseness will materially lessen the number and stubbornness of the acute attacks. And to my mind nothing so certainly develops a cold, a pernicious cold, as a rollicking debauch.. Wine, woman and song knock the foundation stones from the citadel of reason; close the sewers; hypnotize the sentinels, and man's economy is thus an easy victim to the mad riot of enemies without and enemies within. In fact, any sudden chilling of the surface of the body while the normal equilibrium is disturbed—no matter what the cause—is a seductive and certain bid for trouble.

One important etiological factor not mentioned in the paper, and not depending upon a cold for its development, is the neglect of speakers and singers to give the vocal organs regular and systematic exercise. This is especially true of preachers, and not infrequently of singers and vocalists in other fields. They put a severe strain upon the tone and sound-producing apparatus, with little or no proper exercise during the intervening period. And because of such non-use and subsequent abuse an acute (?) attack of hoarseness presents itself. And why not? The vaso-motor nervous system becomes disorganized, and not simply acute, but the foundation is laid for a chronic organic and functional derangement, a constant menace to health and comfort. These delicate and highly organized structures, with their intricate and sensitive mechanisms, must have the most careful and intelligent supervision to meet the legitimate demands made upon them. In this day of athletics and massage, when so much is being done in many ways to develop the muscles and maintain their integrity, the throat specialist and those engaged in voice culture have not kept pace with the onward march of progress.

Another frequent cause of hoarseness and one not generally recognized is the highly reprehensible practice of vigorous or prolonged use of the voice at the age of puberty. During the formative period too much care cannot be exercised. Voices are often ruined at this time.

In considering the cause and treatment of hoarseness we should remember that those of a scrofulous, syphilitic, gouty or rheumatic diathesis are favorable subjects for the development of this complaint.

The advice to put the patient to bed is one that I must heartily endorse, but ordinarily it would require a man with a big dose of base-ball-bat to enforce the advice. But you can insist upon the non-use of the vocal organs, and you can try—though you will usually fail—to guard against a vitiated atmosphere. As to the wisdom of inhaling steam, I am somewhat skeptical. I fear more harm than good results from its use. Again, it is my practice to discourage the use of camphor in any way. Its well-known antidotal relation to many of our remedies, and its tendency to dominate all territory with imperialistic supremacy, cause me to vote against it. Oleaginous nebulæ, impregnated with the remedy prescribed when possible, are of undoubted value in many cases. Some patients will do better on the indicated remedy, without meddlesome interference.

Aconite is unquestionably the remedy at the very outset of the disorder in many cases, but, unfortunately, the physician is not always applied to for relief until the Aconite period is past. In the meantime, the victim has often deluged his defenseless anatomy with heroic doses of Quinine, whiskey, cough medicines containing opium, or some other decoction equally devitalizing. And, again, the hoarseness may have for its parentage the pleasures that seduce the sensuous nature of man. What then, under such conditions, is your treatment? Insist upon abstinence from food. Saturate the patient with water. Maintain the functional activity of the skin and the excretory organs. And Nux vomica is generally *the* remedy in the above-named cases.

In considering remedies not mentioned in the paper, remember the Ammonium salts, and especially *Ammonium causticum*. It is often indicated, and when hoarseness has developed to aphonia, with a raw, burning sensation in the pharynx or larynx, with possible œdema and much mucus expectoration, no other remedy can usurp its place.

When a speaker or singer applies for almost immediate relief, an engagement but a few hours distant confronting him, what are you to do? First, you will try to give the indicated remedy; you will do that because you believe in it, but you will also exhibit it to escape the odium of being unorthodox. Besides employing the recommendation recorded earlier, give the patient Tincture of erythroxylin coca, in three to six-drop doses. Do not prescibe this remedy until within at least two hours of the expected demand upon the patient, and not oftener than every half hour, discontinuing just before the vocal effort. It acts as a stimulant, is mildly anæsthetic and is an immediate voice-toner, especially in weak or nervous subjects. Populus candicans as an instantaneous voice-producer is highly extolled by some.

In addition to the remedies mentioned by Dr. Brooks, when the hoarseness may be due to "straining the voice," it is well to remember *Arum tri.* For any abuse of the voice in speaking or singing, whereby the vocal cords become disfranchised, I have found the above remedy one of the most helpful in the Materia Medica.

Finally, during the whole treatment of these cases, let *Rest,* rest of body and mind; rest of the vocal organs and rest of the digestive ap-

paratus stand out before you as though written in letters of living light.

F. D. Lewis, M. D.: This paper and discussion cover an important subject and go over the ground well. There was, however, one point of great importance that was overlooked, and that was false vocalization. I have treated a number of theatrical people, working their way up from concert halls to grand opera, and have found that most of their troubles came from false vocalization. I have lost patients by advising them to take a course of physical culture and voice training. In cases of acute trouble in singers and speakers, where the voice has to be used, I have found an application of the Aceto-tartrate of ammonium to be very useful.

G. B. Rice, M. D.: I want to take slight exception to the advice given that the voice of professional singers and speakers needs to be exercised constantly in addition to its use on the stage, for I believe that if the voice has been properly placed in the beginning there is little or no necessity for other exercise than that involved in the ordinary duties of the professional's life; provided, also, that the ordinary speaking voice is properly used. How many are there who use the speaking voice in a correct manner? Very few, indeed; but I am confident that no exercise of the voice of a public speaker is needed other than the proper use of it in ordinary conversation. This is not so true of the singing voice. But even here proper speaking will keep the parts in good condition, and after that a few minutes of daily vocal exercise for "limbering purposes" will be sufficient. The proper placing and use of the voice, whether for speaking or singing, makes hoarseness a rarity, colds less frequently and extremely prolonged speaking or singing possibly without danger.

H. W. Woodward, M. D.: The great difficulty that I have experienced is to find a teacher who knows how to teach the correct use of the voice. Many pretend to, but few are competent to do so. At length I found a satisfactory place for voice culture where I could send my patients with the assurance that their voices would be properly trained. That place is the Emerson Institute, of Boston. I am not paid for this commendation, unfortunately. But I have found that those properly trained to use the voice are not subject to attacks of hoarseness, and they who have been troubled with frequent attacks are cured of the tendency by a course of training at that institute.

C. E. Teets, M. D.: I want to add one remedy that I have found very valuable and that has not been mentioned yet, and that is Oxalic acid. It is especially adapted to cases of paralysis of the tensors of the vocal cords, so often found among those who have over-used their voices, and which is also one of the results of repeated attacks of acute inflammation. I also get excellent results from the local application of Tangerine oil; this is an oil from the peeling of the tangerine. It is a splendid application not only for acute inflammation of the throat but also of nasal passages.

E. G. Reed, M. D.: I want to call attention to a very important thing in this connection, one that has not been mentioned yet. We have heard

of various remedies and of the proper and improper use of the voice, but nothing has as yet been said about the subject of proper breathing. It has much to do with hoarseness, with colds and also with tone production.

Everyone is supposed to know how to breathe, but I will venture to say that there is scarcely one in a hundred, even among physicians, who really know the art. When we are treating the troubles of public speakers and singers we may palliate them from time to time, but there will accrue no real benefit until we can persuade them to breathe properly. The use of a small tube for the patient to breathe through is sometimes recommended for the development of the breathing power, but is only useful in developing the muscles of respiration. When the powers of respiration are once properly developed many of these troubles will improve as if by magic.

A. Worrall Palmer, M. D.: We must not forget in treating these local troubles that the larynx is a part of the whole body and that therefore we cannot expect to find a healthy and beautiful voice in an unhealthy body. I have a case in mind that illustrates the point very nicely. A young woman came to me afflicted with chronic hoarseness. She had tried various schools of singing and taken instructions in breathing with little or no result. I treated her and succeeded in getting her better, but the hoarseness returned. Upon interrogating her I found that she had severe chronic endometritis. I sent her to a gynæcologist who relieved her of that trouble, and we have had no return of the hoarseness since. Dr. Hubbard spoke in opposition to the use of saline solutions and in favor of the oleaginous. My own pet hobby is cleanliness, and when there is a catarrhal condition present I use the saline solution first for that purpose and oleaginous afterward. The Aluminol has only a temporary effect and may be useful where the cords are congested and red and the patient wants to sing or lecture right away. It can then be applied just before the use of the voice. The applications of a solution of the strength of five or ten grains to the ounce of water will serve for about four hours. The tendency is to neglect a cold. My pastor will catch a cold on Monday and let it go until Saturday night; then he will come up to have his throat sprayed out so that he may preach on Sunday.

J. N. Anderson, M. D.: It is my experience that when there is anything wrong with the throat or nose, with the remains of the lingual, faucial or pharyngeal tonsils; you will have recurrent attacks of hoarseness. I am frequently called on in emergency cases where singers or speakers have caught "colds" and must use the voice in a few hours. I use local applications and constitutional treatment, and besides that I use Ruhmkoff's coil with an apparatus of vacuum tubes. I make the application directly to the affected parts. It has given very satisfactory relief.

C. E. Teets, M. D.: I should like to ask the doctor which pole he applies to the affected part, the positive or the negative?

J. N. Anderson, M. D.: With this machine it is hard to say which is negative and which is positive. There is nothing to indicate the poles.

C. A. Teets, M. D.: I do not know, but I have heard that the bright light is negative and the other the positive.

J. N. Anderson, M. D.: There is an attachment to this machine by which you can reverse the current.

A. E. Austin, M. D.: I have used this machine with great success. I used the X-ray on a case of chronic hoarseness with success also. In another case that was so hoarse that I could not hear what he said, I used massage with the Wappler machine for a half hour at a time and he would come out from the treatment so that I could understand all that he said.

E. D. Brooks, M. D.: In closing the discussion, I will say that I am very grateful to those who have discussed the paper for the kindly manner in which they have done it. There were several points emphasized in the discussion that were only slightly alluded to in my paper because the length of time was insufficient to treat of them in full. The results of the application of steam in cases of this kind depends entirely on how you use it. It may be harmful or it may be beneficial. I would advise no one to use those powerful agents unless he knows how to use them. In regard to the use of Camphor-menthol, I have a word to say in answer to the criticism. Camphor-menthol is a new chemical compound different in its properties from either camphor alone or from menthol alone. It is neither the one nor the other, and has a different chemical formula from either. I have seen so much good from the use of a three per cent. oily spray that I may say that it is the most useful thing that I know of for a nebulizing solution.

As to the use of Coca, I must protest against it. I do not think that it is a proper thing to do, except in desperate cases where you can get help in no other way than by this temporary expedient. Its good result is always followed by depression, as surely as night follows day. The matter of vocalization and of proper breathing was hinted at, and only hinted at, for lack of space. As to electricity, I use the galvanic current with the positive pole over the larynx and the negative over some indifferent part. This I found very helpful.

THE NOSE AND NASO-PHARYNX; THEIR RELATION TO DISEASED CONDITION OF THE TYMPANUM.

BY J. IVIMEY DOWLING, M. D., O. ET A. CHIR.,

Albany, N. Y.

IN the consideration of so important a subject as the relation the nares and naso-pharynx bear to diseased conditions of the tympanum it is necessary to consider these organs from their earliest development, so that a ready comprehension of the pathological similarity or difference found in these organs may be fixed in the mind, and remedial measures planned accordingly.

It seems to me that too much stress has been laid on the methods of attempted cure of middle ear conditions and not sufficient research made as to the ways of preventing the onset of affections of the tympanum, and that more benefit will accrue to the human race through positive knowledge as to the causes of the various otitides mediæ than mere attempts to cure after they have obtained foothold.

Some one has said that to cure a disease in a given individual the treatment should have been begun with the patient's ancestors. This is true to an extent, as is recognized in hereditary syphilis and scrofula. The time was when a diagnosis of phthisis meant the practical ordering of the undertaker and the early interment of the victim. How different the hopes and prognosis of the present day physician in this particular disease. The reason is the better knowledge of the cause of consumption. We know now that tuberculosis in itself is rarely inherited, but the predisposition is, and it is this fertile soil that renders possible the multiplication of the tubercle bacilli and development of this most fertile disease.

Gentlemen, is it because tuberculosis ends in death that it has been so eagerly studied? Why should we neglect the minute study of that disease which fills our institutions for the dumb, and renders miserable the lives of many worthy persons?

Our remedial measures for the treatment of otitis media fail in a large proportion of cases, therefore the necessity of prevention rather than cure, and we can readily appreciate the well-known adage, "An ounce of prevention is worth a pound of cure."

Dr. Wilhelm Meyer, of Copenhagen, struck the keynote when he promulgated the removal of adenoid growths, both for the cure of deafness and its prevention. But must we stop here? No; the naso-pharynx plays an important part, but the nares also is a cause of some forms of tympanic disease.

Embryology, as well as clinical observation, demonstrates the possibility of the transmission of idiosyncrasies from the parent to the child, but unfortunately the study of the constructive development of mankind does not show any particular original relation between the nares and tympanum, although there is a positive continuity of structure between the tympanum and pharynx, and later through continuity of parts with the nares. Therefore embryology sheds but little light on the possible causative relation existing between the nose and diseased conditions of the ear. We must pursue our search further, and in anatomy we do find an existing relationship, although even here the naso-pharynx is shown to be more intimately associated than the nose, to the middle ear. The chief anatomical relationship between the nose and tympanum exists because of the similarity, and direct continuity, of tissue by means of the Eustachian tubes.

According to Gray there is an intimate relationship existing between all parts of the body through the medium of the sympathetic nervous system. It is my belief that this nerve relationship is probably one of the chief elements in the causation of secondary middle ear changes due to naso-pharyngeal or simply nasal conditions.

Post-mortem examinations, and those made upon the living subject by means of the post-nasal mirror, show that adenoid vegetations rarely obstruct the mouths of the Eustachian tubes, but there is only one opinion regarding the agency of adenoids in producing middle ear changes and deafness.

Nasal obstruction, due to deflected septa, septal spurd, enlarged turbinated bodies and posterior hypertrophies, are frequently associated with middle ear changes, either the so-called dry catarrh or suppurative conditions, and the recent publication of Gradle mentions this fact, which is positively borne out in the testimony of numerous cases in my records. A noteworthy fact in nasal conditions, associated with middle ear changes, is that the tympanic disease is often on the same side as the nasal affection.

In the writer's opinion the relation between the nose, throat and ears is so intimate that an aurist to obtain best results should be skilled in the use of rhinoscopic mirrors, and should be able to recognize all

pathological conditions of the nares and pharynx, and be able to operate, treat and observe the effect of nasal or pharyngeal operations on the diseases of the middle ear.

The method of treating middle ear diseases, I believe is best followed out on the plan of removing adenoids if deafness is present or a suppurative disease exists. If pathological intra-nasal conditions are present, I advise their correction, even though they cause only temporary nasal obstruction, for experience seems to teach that even a spur, though small, may be the means of resulting nasal obstruction, and it is the repeated attacks of acute nasal obstruction that result in the so-called catarrhal deafness; for it is fair to assume that whatever causes a temporary engorgement of the nasal tissues will also cause a similar condition in the Eustachian tubes, resulting in temporary abstraction of air from the tympanum and transitory tinnitus and other symptoms, the repeated attacks being followed with Eustachian stenosis with all its dire results.

The reasons I advance for the correction of pathological conditions within the nose are, first, that through the venous engorgement and irritation of the sympathetic nerves a secondary condition of like kind may be excited in the Eustachian tubes, and a venous congestion set up within the tympanum, resulting in serous accumulation within the middle ear, which being unable to find exit through the swollen Eustachian tube, is the percursor of possible suppurative middle ear disease. A second reason is that given an obstructed nostril, the nasal secretions are unable to find free exit, and forcible blowing of the nose is apt to force some infected material into the Eustachian tubes, which will also result in serious condition of the ears.

Spurs, which do not interfere with nasal respiration, except occasionally, act as sewers directing the flow of nasal secretions into the pharynx instead of allowing them exit by way of the nostrils, and in many cases of this kind I have observed a collection of purulent matter over the mouths of the tubes, and also just above the uvula on the velum palati, but with no suppurative condition of the ears, so that this is an argument in favor of removing all spurs which interfere with the proper drainage of the nose.

Heredity is recognized as an element in the cause of deafness. I desire to advance the theory that at least some such cases may be due to intra-nasal conditions, which permit of frequent nasal obstruction with resulting tubal congestion and tympanic changes. These conditions existing over a period of years cause gradually increasing pathological

lesions within the tympanum and tubes, resulting finally in progressive deafness.

There is now no dispute regarding the effect of adenoids in causing deafness and other serious symptoms. Their removal is always indicated both for the cure and prevention of deafness. Operative measures for the correction of pathological intra-nasal conditions should always be resorted to in the event of any middle ear disease, whether simply catarrhal or suppurative, and even if no aural complications have ensued, but more especially in that class of cases in which there is a history of "hereditary deafness."

DISCUSSION.

Eugene L. Mann, M. D.: The influence of nasal and post-nasal conditions in the etiology of otitis media is a subject well worthy our consideration, and that it has occupied the minds of aurists is seen in the divorcing of the ear from the eye, and its union to the nose and throat.

Not many years ago there were two specialists, eye and ear, and nose, and throat. Now we have it so reorganized that we have eye, and nose, throat and ear. When I first began the study of special diseases I selected the nose and throat, but soon found that in the post-graduate schools of New York they were sending their ear cases to the throat department, and I believe there are few aurists today who do not practice nose and throat surgery. Dr. Holbrook Curtis said that as a nose and throat specialist he was forced into becoming an aurist. That there is a relationship is well established. What that relationship is, is not so definitely determined.

Adenoid growths, recognized by all as a cause of otitis, rarely obstruct the Eustachian orifices. Nasal spurs, not sufficient to cause obstructed breathing, are often associated in a seemingly causative way with otitis. It has seemed to me that the effect of obstructions in nose and naso-pharynx on the Eustachian tube, hos been one of extension or causation of inflammatory swellings along the tubes or at their mouths; not simply the interference with the air currents. A partial obstruction of the nose, while it would interfere with the incurrent, would in the same degree magnify the outcurrent and on the valsalva principle so ærate the middle ear. It has seemed to me that non-inflammatory nasal obstructions, or those associated in only a small degree with inflammation, are less frequently followed by otitis media than those in which the inflammation is more pronounced, even when the obstruction to the air current is less. As far as my observation goes the proportion of otitis in polypus and hay fever cases is less than in the more inflammatory diseases.

I have another theory, somewhat at variance with the above, and yet I will present it, that by discussion and observation we may test it and so confirm or reject. That is, that from the anatomical position of the

mouth of the Eustachian tube the air that inflates it is that which traverses the inferior meatus, not the middle, and that obstructions and inflammations that attack the inferior meatus are more prone to cause otitis than those of the middle or superior.

Another point suggested by the paper is that we should use great care in inflating the Eustachian tubes to see that the post-nasal space and nares are free from secretion. My own practice is to wash these thoroughly with an alkaline spray, let them drain, then use an oil spray and vapor before using the catheter or Politzer bag; or, what has taken the place of the Politzer bag at the office, a globe nebulizer.

A. Worrall Palmer, M. D.: There is one thing that I wish to speak of in this connection, and that is the occurrence and recurrence of ear troubles after sinus disease. This fact has very probably a bacteriological basis. The carrying of the discharge from the sinus to the structures of the ear, or at least of the infectious material, explains its frequency. The same may be true of discharges from the inferior meatus. Very appropriate to the subject is a consideration of the proper cleansing of the nose. There was a discussion on this phase of the subject last week at Saratoga. There are so few, even among the little children, who know how to blow the nose, that I think that the point is well taken, and that we as specialists should think of it oftener than we do, and give an occasional word of instruction or advice to our patients upon the subject. The habit of trumpeting is very common, and is injurious. I have seen little tots do it as well as the older patients.

E. D. Brooks, M. D.: I wonder if neglect of the nose and its treatment by the ear men is as common as Dr. Dowling has indicated in his paper. I am not aware of what the general rule is in that respect, but those ear men that I do know anything of, pay great attention to the nose and its troubles. They look after hypertrophies of the turbinated bodies and nasal spurs and such irregularities, and try to relieve them as a preliminary step to the treatment of otitis. Ear specialists who do not do as they should in this respect should be made aware of the error of their ways and reformed, for certainly few things are of so great importance.

J. I. Dowling, M. D.: In regard to Dr. Brooks's remarks I will say that I was led to take up this subject because I had seen quite a number of such cases, cases that had been neglected by men who had the name and practice of aurists. I know the view of the majority of aurists on that point. I thought that perhaps the paper would bring out discussion on the subject by men of larger experience than myself. I believe in timely operative procedure very strongly. I think I have seen some cases of progressive deafness held in check, and either made stationery or their progress made slower by judicious operative measures, and I was in hope that some of the older men would corroborate my statements.

PHARYNGO-KERATOSIS, BENZOZONE AND THE HOMŒOPATHIC TREATMENT OF TONSILAR AFFECTIONS.

BY ROYAL S. COPELAND, A. M., M. D.,

Ann Arbor, Mich.

THE laws of one or two States of the Union permit the granting of so-called "blanket" charters. Under the provisions of such an instrument a corporation can engage in everything from "ping pong" to silver mining. The omnibus title of this essay was purposely selected in order that a variety of topics, each of recent interest to the writer, may be presented for discussion. Let it be said, then, there is nothing formidable about this paper except the blanket title.

Parasitic Diseases of the Pharynx. In their classification of the parasitic affections of the pharynx, our American text-books are not clear. Perhaps the foreign writers are *almost* as uncertain, but the British works of recent date are more definite in their statements regarding these diseases. For seven or eight years the German investigators, Siebenmann particularly, have published brief reports of such conditions. But the whole matter is yet more or less chaotic, and I agree with Dr. Lewis, who, presenting a paper on pharyngo-mycosis* at our society two or three years ago, stated that we owe it to the profession to make public our own experiences in these diseases.

The continuity of tissue leads us to expect the same liability to disease of the pharynx as to disease of the mouth. The same parasites and the same fungi infest both regions. A parasitic affection may begin in the mouth and extend to the throat, or it may start in the pharynx, creep into the naso-pharynx and nares, and forward to the base of the tongue or into the mouth. Certain parasitic conditions, however, seem to prefer the one route to the other. Thrush, for instance, is first noticed in the mouth, while the disease we are about to consider, pharyngo-keratosis, has its beginning usually on the tonsils.

The writers of five years ago considered pharyngo-mycosis and pharyngo-keratosis as one and the same disease. Lennox Brown took this view. Siebenmann formerly looked upon mycosis as a disease of

*Mycosis-Tonsillaris. Transactions Amer. Hom. O., O. and L. Society, 1899.

specific origin, due to the leptothrix buccalis, while keratosis he considered a secondary condition due to the proliferation of the epithelium. According to Siebenmann's view, the latter condition was simply the chronic form, the natural result of the former.

Each, however, has behind it a pharynx already abnormal by reason of previous disease. Any chronic irritation or inflammation of the throat may predispose to one of these conditions.

Paryngo-Keratosis. Before considering in detail the more recent thought regarding the differential diagnosis of the parasitic diseases of the pharynx, it will be wise to define what is meant by the term pharyngo-keratosis, or keratosis-tonsillaris, as it is sometimes called.

In the language of Kelly, this is a condition "characterized by the presence of small, isolated, tough, firmly adherent, white, excrescences or plaques seated on an apparently healthy mucous membrane." "They vary in size from a mere white point to a distinct, elongated, horn-like excrescence, and are found most frequently on the faucial tonsil and base of the tongue, occasionally in the naso-pharynx and lateral pharyngeal walls."* In the cases I have met the excrescences look like cottage cheese, having a granulated and irregular surface. When caught in the forceps they are found to be tough and firmly attached. The whole tonsil can be lifted from its seat by traction on the seized growth. The latter is brittle, however, and soon breaks off, leaving the base of the excrescence still attached to the tonsillar surface. In each of the several cases seen both tonsils have been involved, and in one or two the base of the tongue as well.

The outgrowth consists of corneified epithelium, pus, fibrin and microorganisms. Kelly claims that the leptothrix fungus, found in most cases, has no connection with the keratosis. "Its presence is to be explained merely by the fact that the excrescences, like the tonsil crypts themselves, form a suitable nidus for the development of the fungus. Cases are on record where no leptothrix has been found associated with the epithelial excrescence."*

In the cases falling under my observation there were no constitutional symptoms. The patients were from eighteen to forty-five years of age, well-nourished and apparently healthy. They complained of scratching and irritation in the throat; worse at times. Occasionally there was some inclination to cough, but on the whole no symptoms worthy of special note. The only occasion for consulting a physician was the

*Hall and Tilley, 1901.

rather frightful appearance of the tonsil. A glance into the throat in each case gave the first impression that the patient had a most decided follicular tonsillitis, or the most neglected sort of a cryptic tonsil. My friend, Dr. C. G. Jenkins, has told me of seeing two patients having exactly the same symptoms and objective appearances.

Pharyngo-Mycosis. Mycosis seems to be a disease associated with lowered vitality. At its onset there are malaise, fever, pain on swallowing, and the other symptoms of a mild attack of acute tonsillar inflammation. Instead of granular masses we find shiny patches on the tonsils, uvula and tongue. These are readily wiped off with cotton and do not firmly adhere to the parts, as in pharyngo-keratosis. The underlying mucous membrane is found red and inflamed.

Differential Diagnosis. The absence of inflammatory and constitutional symptoms in pharyngo-keratosis, the granular appearance and firm adhesion of the excrescences, make the clinical differentiation easy. In my own opinion the two conditions are separate and distinct. Future investigation may prove the old theory true, but until we receive further light I shall believe that mycosis and keratosis are two diseases, separated microscopically, physically and clinically.

Treatment. All sorts of treatment have been recommended. On the theory that the disease is parasitic in origin Bichloride of Mercury has its advocates, and the actual cautery has been a last resort. Dr. Jenkins treated his cases with equal parts of Menthol, Camphor and Iodine crystals. In this connection I desire to call attention to the use of Benzozone. I do this, not so much because of its special value in pharyngo-keratosis, but more particularly because it is one of the newer germicides, and not yet in common use by the profession.

Benzozone. Since attention was first called to the injurious effect of light upon bacteria, and to the fact that cultures may be sterilized by exposure to the sun, experiments have been made to discover the reason for this peculiar fact. For a quarter of a century the scientific world listened to various theories, accepted some for a time, and finally rejected all as inadequate.

It was finally discovered that strong disinfecting agents are formed by the action of the sunlight upon certain organic substances. Examination revealed these to be superoxides or peroxides. As every chemist knows, these are formations which may occur with a number of organic substances. Among such peroxides is the one formed from the anhydrides of benzoic and acetic acids, and known as Benzozone.

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*Hall and Tilley.

This body is of itself an inert substance. When placed in water it is slowly decomposed and forms a loose chemical body containing a large amount of atomic oxygen, to which is due its antiseptic properties.

The Benzozone, which at first is soluble only in one part to eighteen thousand parts of water by standing, becomes a very soluble compound due to changes already mentioned. This effect can be brought about by succussion, the more thoroughly done the more powerful the solution. Preparations containing small amounts of the Benzozone perfectly dissolved are more efficacious than concentrated solutions.

It has been suggested to me by some wise gentlemen that in the manufacture and therapeutic application of Benzozone the attenuation and dynamization theories of Hahnemann have been scientifically verified.

The action of Benzozone upon micro-organisms is that of an oxidizing agent. It has but little effect upon the higher forms of living matter.

Professors Freer and Novy, in advocating the use of the compound in typhoid fever, gave the results of experiments upon a number of students who were fed upon milk and Benzozone for a number of days. During the entire period the fæces were sterile. The advantage claimed for this antiseptic is that the solution in passing through the body is constantly liberating oxygen, of which the amount is increased during decomposition.

Knowing the value of Hydrogen peroxide in suppuration, it occurred to me that this more powerful Peroxide should be of great service in the treatment of corneal ulcer and other pus conditions about the eye. Consequently it has been prescribed in my clinic as the local treatment in a number of cases. In solution of one to one thousand it is applied every two hours. It causes no pain or other disturbance.

I do not care to say that it will displace every other local measure, but in all fairness it must be conceded that for rapidity of action in clearing up a corneal ulcer Benzozone is far superior to anything else I have ever used or seen employed.

Benzozone in Pharyngo-Keratosis. Naturally in our experiments we made use of Benzozone in cases of tonsilitis. Its results were so gratifying that when the pharyngo-keratosis presented we employed it there.

The method of application was as follows:

After cleansing the throat thoroughly with an alkaline spray and wiping out with cotton, the tonsils, supra-tonsillar fossæ, base of the tongue and pharyngeal wall were swabbed with the Benzozone solution

—1 to 1000. Then, to make sure that every crevice was reached, the same strength solution was sprayed into the throat with an atomizer. This procedure was repeated every two hours.

In simple tonsilitis the results have been amazing. It must be confessed that in pharyngo-keratosis the first impressions were not favorable, but by persistence in its use the growth disappeared after two or three weeks.

Internal Remedies. Having said so much about local conditions and local treatment, I should not dare to close this medley without reference to the internal remedy in the cure of tonsilar affections. "Give me some Homœopathy," was the request of our president, and in obedience to that demand and the faith of my own heart the remaining pages of this paper shall be devoted to that end.

A perfectly healthy tonsil, like other healthy tissue, is very likely to resist germ invasion. So back of the pharyngo-keratosis there must be some lowered power of resistance due to some condition of a congestive or catarrhal nature. Any tonsil so affected may have engrafted upon it the obstinate disease under consideration. In discussing therapeutics, then, we must begin with remedies covering the very earliest symptoms of a condition which may eventually result in a keratosis.

Aconite. In the treatment of acute tonsilar affections the first remedy thought of is Aconite. Speaking of this drug, it is interesting to note the changes in therapeutics experienced by our brethren of the older practice. This is a trite saying, but the fact is always rather satisfactory to those of us who look upon Similia Similibus Curentur as a theory in medicine which seems more and more likely to be accepted as a truth.

Your speaker has in his library five old school works on throat diseases, all published within the past twelve months. Every one of these books recommends Aconite tincture, in one drop doses, repeated every hour, as an extremely useful remedy in tonsilitis, provided it is prescribed within twenty-four hours of the onset of the disease. It is said not to be of any value, except it be given early. Does not this advice fall upon the homœopathic ear with such familiarity of sound as to make it seem almost like a quotation from the Fathers?

Brunton, in speaking of the effect of Aconite, as recorded in his recent "Lectures on the Action of Medicines," says: "The modus operandi we simply do not know. . . . There is one very curious point about it, that Aconite given in small doses appears to slow the pulse much more than larger doses; so that one minim of the tincture of Aconite,

repeated every hour or so, will slow the pulse more than doses of ten minims. . . . Aconite is very useful in cases of commencing inflammatory disease; for example, in cases of tonsillitis where the inflammation is just beginning it appears to be often cut short by the administration of the Aconite. . . . You may give as a dose the fourth or a third of a minim, or even less, and repeat it, say, every half hour, until you find that the temperature has fallen, and the pulse is slower."*

Considered physiologically or allopathically, how can Aconite, which itself produces congestion, such as is found in tonsillitis, cause a subsidence of the early symptoms of that disease?

In this connection, even though it takes me a trifle from my subject, I cannot forbear a reference to another remarkable instance of old school tumbling. Watson Williams, of the Bristol Royal Infirmary, published last year a most excellent two-volume treatise on the "Respiratory Tract." Your speaker took pleasure in noting the following paragraph in the article on Periodic Rhinitis. Perhaps its publication does not commit the author, or make him a party to the heresy, but you must judge for yourselves as to its value and draw your own conclusions as to the trend of such advice. This is Williams' language:

"Treatment by hypodermic injections of aqueous solutions of plants or flowers which cause hay fever has been advocated by Holbrook Curtis, and he claims to have obtained gratifying results from repeated injections of extract of ragweed and other flowers, with a view to the production of immunity to their influence."

Shades of Samuel Hahnemann!

Unless I am greatly mistaken, when the amalgamation of the two schools of medicine occurs—the probability of which the newspapers of this morning discussed—it will be after the old school has come over to us, foot, horn and dragoon.

Belladonna. Your speaker desires to recall your attention to the great value of Belladonna as a remedy in the early stages of tonsilar disease. A dose of the third potency every hour has a most satisfactory effect when there are found the symptoms so characteristic of that remedy. The first abnormal sensation noticed at the onset of a tonsilitis is a feeling of discomfort in the throat, as if it were raw or scraped. On swallowing there is a sense of fullness or narrowness of the throat, a symptom which may increase to one of positive pain. On turning the head

Pps. 323-4: Lectures on the Action of Medicines, etc. St. Bartholomew's Hosp. T. L. Brunton, M. D., LL. D., F. R. S.

or external pressure being applied to the neck there is felt a soreness, which gradually increases in acuteness. The usual symptoms of congestion, shown by the red face and headache, the sensitiveness to sound and light, and the hot skin, all confirm the indications for and the certain value of Belladonna.

It may seem superfluous to speak of this common remedy in connection with a disease in which it is universally considered of prime value. The experience of your speaker is that it is the common things which are overlooked. We know all about the diagnosis and treatment of appendicitis, for instance, when frequently we seem at a loss to know what to do for the common, old-fashioned stomach-ache. For this reason it has seemed proper to remind you of the great value in tonsilitis of our old friend Belladonna.

Baryta Carbonica. Likewise, Baryta carbonica and Kali muriaticum are remedies of importance in this condition, and remedies not in common use. Professor Dewey, in his recent excellent work on "Therapeutics," calls attention to the use of Baryta carbonica in chronic enlargement of the tonsils, saying: "It undoubtedly has been very often wrongly prescribed here, as it corresponds to comparatively few cases." Hughes, whose recent death has given us a great loss, places this remedy among the most prominent ones for acute tonsilitis, saying that in his hands it has been of almost unfailing efficacy. After prescribing this drug in innumerable cases of chronic enlargement of the tonsils, your speaker is ready to state as a positive fact in his clinical experience that Baryta carbonica is absolutely useless in such cases. On the other hand, in acute attacks of inflammation, where the tonsils are already indurated and enlarged, it is a remedy likely to be useful. In children of what we used to call the scrofulous type; children defective mentally and physically; children who take cold on the slightest change in temperature; children who have coryza, with great swelling of the upper lip and attacks of sneezing, in such patients it is likely to be useful. The peculiar throat symptom characteristic of this remedy is *smarting;* worse at night and in the cold. There is a decided tendency to suppuration in the Baryta case, and usually certain stomach symptoms accompany the throat disturbance. An unsatisfied appetite, with a longing for pastry and like dainties, eructations, hiccough, nausea and even vomiting, confirm the prescription.

Chininum Sulphuricum. It is common practice today in the old school to prescribe hourly doses of Salicylate of soda, in amounts varying from ten to twenty grains. Most authorities, not satisfied with a single drug,

combine with it three or four grains of quinine. This practice has always appeared to the speaker to be of doubtful propriety. Such doses of quinine as are recommended must produce its physiological effect. Certainly, then, any congestion of the respiratory tract, the result of tonsilitis, must be increased and aggravated by the administration of quinine. Really it seems that the patient taking this treatment must recover, not by reason of, but in spite of, the alleged remedy.

But given homœopathically it occurs to your speaker that quinine might be an extremely useful remedy in tonsillar affections. Chininum sulphuricum has congestion, swelling, scraped sensation and decided soreness of the throat. Itching and tickling, with inclination to cough, are other symptoms characteristic of this remedy. The possible use of Chininum in tonsillar disease is a subject worthy of careful study and investigation.

Lachesis. Another remedy commonly overlooked is Lachesis. It has the sensitive throat, the desire to swallow and the many classical symptoms of tonsilar disease which should make it a remedy more frequently prescribed.

The Internal Remedy in Pharyngo-Keratosis. In an attempt to find a remedy homœopathic to pharyngo-keratosis your essayist has made a search of the provings, and, so far as may be, of the homœopathic literature. Unfortunately the effort has not been eminently satisfactory in results. However, study of the condition, with a view to an internal remedy, has established in my mind certain convictions.

Siebenmann and Kelly, in their most recent publications, claim that the disease, whether parasitic in origin or not, is in the true sense a keratosis. That is, there is a cornification of the epithelium due to hyperplasia of the epidermal covering of the tonsil. In another connection we have considered this fact more fully, but it is repeated here because it has an important bearing upon the choice of remedies which may prove of value in this disease.

In all probability there is no remedy which has a similar tonsilar condition in its pathogenesis. This would not trouble us were there an abundance of other symptoms to determine the similimum. Unfortunately, in most cases of pharyngo-keratosis, at least in my experience, there has been a dearth of symptoms upon which to prescribe.

But why may we not reason from analogy? There are a few remedies, Thuja particularly, having among the recorded symptoms of the provings excrescences of the skin and mucous surfaces. It will be remembered that Hahnemann recommended Thuja for what he called

"sycosis," where, in the form of whitish, fungous, sensitive, flat elevations, the excrescences were found in the cavity of the mouth, on the tongue, palate and lips.*

The use of Thuja in somewhat similar conditions affecting the vagina and cervix leads me to believe it might prove of great value in pharyngo-keratosis. For the same reasons remedies producing similar conditions of the skin and mucous membranes, such as Kali muriaticum, Staphisagria and Nitric acid, may be curative in this condition.

Unfortunately, I can offer no clinical verifications of this theory, but for my part, after testing the more or less unsatisfactory results of heroic treatment in pharyngo-keratosis, I am frank to say I shall trust next time to a remedy prescribed as closely as possible in accordance with the law of similars.

In conclusion, your essayist has had no ambition to settle problems, but desires rather to excite discussion. If he has said enough to do that he is quite content.

DISCUSSION.

W. N. Emery, M. D.: In opening the discussion of this paper, I wish to congratulate the doctor on the concise and clear manner in which he has treated the subject in hand, and acknowledge the pleasure I have had in it's perusal. It bears in forcibly upon my attention the fact that the present century is progressive. The space of a decade only allows of so much change that a man is rusty, at least, on definition and diagnosis, if he depends on authority over two or three years old.

The question constantly arising is whether the new is always an improvement on the old. Many times we leave a definite position to accept one of questionable worth.

I wish to call attention to the definition of Mycosis and Keratosis, as given in Foster's Encyclopædic Medical Dictionary: *Mycosis* is an affection of the skin, characterized by fungous excrescences and tumors; of the pharynx, the same produced by a leptothrix; *Keratosis* is a physiological transformation into horny tissue.

Bishop, in his article on Pharyngomycosis, says: "It is a rare parasitic disease, consisting of small, white or yellow growths, projecting above the mucous membrane, instead of occupying a recessive position, as is the case with tonsilar concretions. The growth is not soft, like the cholesteatoma of the tonsil, but tough and somewhat difficult to remove in its entirety."

"Diagnosis," Bishop continues, "is easily made since the symptoms of inuammation characterizing pharyngitis, tonsilitis, etc., are wanting. It is distinguished from tonsilar concretions by the prominence of the growths and their location without the lacunæ."

*Burt's Materia Medica, p. 927.

Dr. Copeland's description of Pharyngomycosis corresponds exactly with numerous cases that have come under my observation of streptococcic infection, as shown by microscopical examination of cultures of these conditions.

I am inclined to be a little conservative in regard to changing old definitions, and to consider these conditions as of the same family, mycosis the acute, and keratosis the chronic, manifestations of the disease.

Regarding treatment the field has been most thoroughly covered. Benzozone seems to show very gratifying results in Dr. Copeland's hands, and I look forward with some expectancy, hoping I may achieve the same results in these most obstinate conditions. In closing, allow me to quote our reverend Dr. Hughes, and submit for your consideration another remedy than those already enumerated. He says: "Suffice it to say, that whatever you may be led to think of the sycosis theory, the presence of excrescences on skin or mucous membrane may always suggest to you the use of Thuja."

THE NON-OPERATIVE TREATMENT OF MASTOIDITIS.

BY PERRY DICKIE, M. D.,

Brooklyn, N. Y.

THE suggestion of a subject so at variance, until just recently, with the consensus of opinion of a large majority of our aurists, would seem to savor of rebellion to the dictates and teachings of what are in common parlance designated as the "authorities." An indefinite term not always perfectly clear and comprehensive to all of us, but still a very useful one at times when we are in a "hole" and need something to back us up; when on such an occasion the word assumes tremendous significance. The treatment of mastoiditis otherwise than by operation has hitherto by a large number of our modern radical aurists, especially of the regular school, been looked upon as but a myth, a delusion and an impossibility not worth attempting or even considering; as the only thing to be done in this condition, to operate, and like the old politician's advice to the young one as to his voting, "early and often."

Therefore, the suggestion in the face of what has been considered the impossible must of necessity be accompanied by feelings almost akin to trepidation, a hesitancy as to the, so to speak, shattering the cherished and treasured idols of the past, and in fact becoming a veritable unintentional iconoclast.

But it has ever been that what in this world of ours has had a beginning must of necessity have an ending at some time, and though while we would not insinuate that it were possible to do away with operation in mastoiditis, still must claim that a considerable lessening of it is so. During the last few years, with operative measures so on the increase, it would seem to one that mastoiditis had become a general epidemic; that the possession of in an individual of an intact mastoid, to some of our aurists, to be as much of a seeming source of irritation as a red flag to a bull; in fact, as rather a personal affront to him, to be wiped out only with mallet, chisel and gore.

Bidding fair to reach the heights of excess indulged in by some of our appendectomists, whose vision is so distorted looking one way that

they see nothing but diseased appendices, and every case of intestinal colic an indication to remove this unfortunate member of the body which has so unwittingly incurred their dire displeasure.

To suggest to these enthusiasts the existence of a non-operative form of treatment for this, their pet malady, if not endangering the presumptious one's bodily welfare, at least calling forth denunciations of a most scathing character, for daring to (as Jerry Cruncher, in Dickens's Tale of Two Cities, would term it), "flying in the face of his vitals."

But such a glorious future, from the enthusiast's standpoint, is not in store for mastoidectomy, as there are frequently being reported in the various journals, and even at society meetings, cases aborted or cured by non-operative measures; which, while these reports, although treated with scant courtesy or neglect, and attempts, sometimes successful, to suppress or smother at their birth; still they are unmistakable evidence of the fact that this condition does not require operative treatment in every case, and is curable by less heroic means than we have been led to believe by some.

But the strongest piece of evidence as to the possibility of this form of treatment comes to us in the report of six hundred cases of acute mastoiditis cured without operation, save in somewhat less than a dozen of them, by Dr. B. Alexander Randall, of Philadelphia, whose high standing must preclude the charge of mistaken diagnosis, sure to be made in answer to a statement of such magnitude as this.

Surely one cannot but admit that this is a pretty strong backbone to support a conservative in his opinions, notwithstanding what one might hear to the contrary.

Now, in the face of this, that the advice of some of our aurists in this vicinity is to operate in every case presenting symptoms of mastoid involvement, without, as they term it, "wasting time" in attempting to abort the condition, would seem a degree of excessive radicalism not warrantable, as there cannot be such a difference of type in this locality from that of a city but two hours' railroad journey from here to call for the advocating of such an amount of wholesale operating.

Besides even this, some have reached such a stage where not only the operation is advised in all cases of it, but in those of doubtful diagnosis what is designated as exploratory mastoidectomy is advised and practiced. Unlike the old saying, "Be sure you're right, then go ahead," we now have the new version, "First go ahead to see if you are all right."

True, it is conceded by all, that the operation of mastoidectomy, when performed as it should be, aseptically and skillfully, is free from all actual danger to life; but the tediousness and delay in the healing of the lining mucous membrane, and in many cases a persistence of the discharge after the operation, no matter how technically perfect it may have been done. mars all the glory that might otherwise be attached to it; notwithstanding we have Ballance's skin grafting process to help us out in some cases, but as a rule the after-waiting is both wearying to the patient and not calculated to make the aurist conceited over his work.

Therefore, I say, give the patient the full benefit of the non-operative treatment before subjecting him, and also ourselves, to that which awaits us after the operation; to him as above described, to us in the censure and criticism of the patient, his relatives and friends, which we are sure of in cases of delayed healing; besides occasional derogatory suggestions behind our backs from his or her medical friends who could have done so much better.

In the treatment of mastoiditis, of course, all authorities advise that when seen early enough an attempt should be made to abort the condition; but by some form of reasoning our radical extremists construe the meaning of the term "early" in such a way that this period of time seems to be always past before they have seen the patient.

Hence their advice as to invariably an operation.

The usual early treatment recommended for mastoiditis by the large majority of aurists of the regular school is the employment of cold; either by means of Leiter's coil or the ice bag, kept continuously in position for from twelve to twenty-four, to forty-eight hours at the most, when, if local tenderness still persists, then operative measures are indicated. It has been the experience of numerous observers as to the disappearance of the pain, and an abatement of the symptoms on the application of the cold, but its liability to return at a later date after the continuance of its use, when an operation has been obligatory.

This mode of treatment has, therefore, not proved to be the grand panacea for this condition, although the only non-operative one used by the majority of aurists of the regular school.

The use of cold in this condition, as in all others, applied persistently to the part, has a very powerful depressing action, and to be of any benefit at all in an inflammation must be used only in the earliest stages, and when of an active type.

Its use must be begun early, and before an exudation of any kind

has taken place, as after this it is too late to be of any real benefit, except to possibly deaden the pain for the time while in use.

Its action being to drive the blood from the part and lessen the congestion, thus allowing the over-distended vessels to recover their lost tone and elasticity.

But even in this early stage care must be exercised in its employment not to carry its use too far, lest by so doing we interfere with the action or process of repair, and thereby cause its impairment or stoppage, as the possibility is ever present of converting, by a too free employment of cold, an inflammation into a necrotic or gangrenous process. This is practically what I consider we have present when, after an abatement of the condition by the use of the Leiter's coil or the ice bag, there is later on a return of the symptoms and condition necessitating an operation.

And I am firmly of the opinion that whatever cures have been effected by these means, the disease has been in the extreme early stages; in fact, what we might term the pre-exudative.

Notwithstanding that twenty-five to thirty years ago it was demonstrated by surgical experience that in inflammatory conditions the superiority of heat over cold as an external application was far in excess, yet during the last few years there has sprung up a reactive tendency to its wholesale use in the treatment of mastoiditis.

Why, in the face of past experience, an agent whose sphere of action has been so correctly defined, and whose place has been allotted to it in the domain of therapeutics, should be used so extensively for a condition which even its warmest past advocates are now beginning to admit serves of but little use is certainly incomprehensible to say the least. But ere long, as the ideas of the medical profession are as a rule ever of a pseudo-migratory nature, it is to be hoped for the good of the patient that for this condition at least cold will be supplanted by heat in the regular mode of treatment in mastoid inflammation.

As to the use of heat, from which such brilliant results have been obtained; although as a rule not quite as preferable in the early stage of mastoiditis, on account of in some cases not allaying the pain as effectually as cold, and as of not as great means of comfort to the patient, still as to its ultimate curative action is far in excess and superior in every way to it.

But as the surgeon is usually called in after the disease has certainly reached the stage where the use of cold is past, this point need not be taken into account, but simply employ heat at once, which can be but of benefit in all stages and injurious in none.

The action of heat being a dilatation of the vessels and an increased flow of blood to the part, and as a result a quickening of the general circulation, promoting the absorbatory process, and whatever exudatory products present, unless in such cases as to be completely overwhelming in quantity, will remove them by means of the blood vessels and lymphatics. By this means accomplishing for what otherwise operative measures would be necessary.

And even in cases where the application of heat is disagreeable to the patient or causes pain, its use should be persisted in, the sensitiveness of the patient being allayed by the use of an anodyne or hypnotic.

The main factors in the treatment of mastoiditis consist of:

Rest in bed, first of all and one of the most important, and to be in all cases rigidly insisted on by the physician.

The patient must be put to bed as early as possible in the disease, remaining there until all fever has subsided, the temperature has become normal, and all tenderness or pressure has disappeared.

This rule should be observed in all cases whether the condition is serious or not, as the recumbent position enhances to a considerable extent the chances of recovery and the prevention of the more serious sequelæ liable at any time to complicate the attack.

Dry heat, applied to the mastoid, ear or side of head by means of a Japanese pocket stove wrapped up in flannel and secured to the side of the head by means of a bandage, is the most convenient form of application, as it allows of free movement to the patient.

Or else the head may rest on a hot water bag, or a bag full of hot salt previously warmed in the oven, which will retain its heat for a considerable period of time.

Or a small bag the size of the meatus may be made out of an old glove finger, filled with hot salt and inserted into it, affording often considerable relief.

The above measures will in many cases, if not too far advanced, together with internal medication, be sufficient to abort the attack and effect a cure.

If, however, there is no abatement of the severity of the symptoms after twelve hours, and on examination the tympanic membrane shows signs of a bulging at any point, a free incision must be made into it, pushing the knife well in so that its point impinges on the inner wall of the tympanum, carrying it well upward into the vault, and also extending it out into the canal for a quarter or half an inch; thus permitting the escape of any purulent secretion if present, at the same time tending in a most effectual way to reduce the existing congestion.

Of course, before operation and also afterwards, syringing the canal with an antiseptic solution to prevent bacterial infection.

The above we would be more likely to find in acute conditions, but where either in acute or chronic the membrane, although perforated, the secretion if impeded in its outlet, the opening should be enlarged to its fullest extent to allow complete egress for the discharge.

The use of suction by means of an apparatus for this purpose is a very effectual means to promote the discharge when from any cause it is not free. Irrigation is necessary when a purulent discharge is present, its frequency according to the amount of it, but should be sufficient to keep the canal clean; as a rule three or four times a day, for 15-20 minutes at a time, using water that has been boiled and at a temperature of 110-125 Fahr., by means of a fountain syringe, with an outlet and inlet tube.

This treatment has been the means of effecting many brilliant cures without the adoption of which an operation would have been necessary, as few cases of this disease, if any, recover spontaneously.

These methods of procedure after faithful and conscientious trial, if failing, as, of course, in some cases they will, we can then, feeling that we have done our utmost to avert it, resort to operative measures according to the requirements of the case and the existing circumstances.

Internal medication. I will not use here the old "chestnutty" term, "properly indicated or carefully selected remedy," so often used as a cloak to cover our ignorance, but would suggest that the following will be found of service on general principles:

Aconite, in half drop doses of the tincture, several times an hour for a few hours, will be of great benefit early in the disease.

Ferrum phos. 3x, for the pain, a few grains every quarter to half an hour. But when the pain is very severe this is not capable of allaying it, and anodyne solutions dropped into the canal most likely to be required. These failing, Morphine, either hypodermically or by mouth, should be given.

Calcium sulphide 3x, a few grains three times a day. In the later stages and when discharging.

DISCUSSION.

J. M. Fawcett, M. D.: It is a pleasure for me to discuss this paper of Doctor Dickie's, as his experience in this disease is entirely in harmony with my own. Therefore, I can only hope to emphasize and possibly elaborate a few points in this valuable and timely paper.

I will say at the beginning that I am not opposed to the mastoid

operation, nor do I hesitate to perform it where it is clearly indicated, these cases being more frequently found in chronic neglected suppuration, with caries and granulations, involving the tympanum, attic, antrum and mastoid cells. In acute or sub-acute inflammation of the mastoid, I believe, if properly managed and treated from the beginning, very few cases will require operative interference.

Several years ago I had a valuable object lesson along this line. A girl about sixteen years of age came to my office suffering from acute suppuration of the middle ear with severe pain, swollen and inflamed mastoid. Her mother, a poor widow, was compelled to go out to work all day, leaving this girl at home alone,to attend to herself as best she could. According to my teaching at that time, I informed her of the grave danger she was in, urging her to go to the hospital and have an operation at once, unless she wanted to "join the silent majority!" She said she would go home and think about it awhile. I found a small perforation in the drum membrane, which I incised freely, gave her some medicine, and instructed her how to apply heat over the mastoid and ear.

I heard nothing more from her for about a month, when one day she came into the office and laughed at me for wanting her to go to a hospital, and, as she expressed it, "have her head cut open."

Examination showed the entire trouble had cleared up and hearing was normal. I asked what she had been doing, and she said she had applied the heat herself through the day and her mother did it for her at night when she was awake. *That was all.* I reasoned that if, under such adverse circumstances, a case of this kind could make so good a recovery, others should do equally as well, under improved conditions, with good treatment and nursing.

I have many times since verified this prediction. A detailed history of these cases is beyond the scope of this discussion; some were seen early, others not until some days or even weeks after the on-set of the disease. All were treated in a similar manner by *absolute rest in bed* and *heat externally, internally and eternally* until all pain, swelling and tenderness had subsided. All recovered with *good hearing;* there has been no relapses. Can operated cases show as good results, especially as regards function?

And next to the preservation of life, the *unimpaired function of the ear* should be the standard by which success is judged. This point seems to have been generally lost sight of and is rarely mentioned in the reports of enthusiastic operators!

I think the statement that "mastoidectomy properly performed is free from all actual danger to life" is optimistic to say the least. There is a danger from the anæsthetic, however slight, without mentioning accidents that may occur with the most skillful operator. The number of cases of delayed healing and persistent discharge after the radical mastoid operation that I have seen in the European clinics have made me rather conservative regarding this operation in private practice.

The importance of establishing free drainage by a thorough incision

of the tympanic membrane, the benefit from hot applications and the danger from cold ones in mastoiditis, so ably and logically set forth by Doctor Dickie, are worthy of the earnest consideration of all doctors that treat diseases of the ear. The old and young, enthusiastic thirsters after mastoid gore, should ponder well over the report of Doctor Randall of nearly six hundred cases of acute mastoiditis cured without operation.

C. H. Hubbard, M. D.: In the treatment of these cases, and in the discussion, I was surprised that neither the writer of the paper nor of the discussion had a word to say about our old standard remedy *Capsicum*. It is a remedy for many of these cases that you can pin your faith to with a great deal of confidence. I have had cases come to me with pain, fever, swelling, redness and the auricle standing out prominently from the head, in which *Capsicum* was administered with almost magical results, the symptoms subsiding rapidly and the case going on thus happily to complete recovery. Time and again have I seen this happy result. *Capsicum* is generally indicated before suppuration has taken place, but even after that it will often act very beneficially.

G. A. Shepard, M. D.: The last two cases of mastoiditis that I treated were as severe as any that I have seen in my whole experience; the pain was extremely severe, extending over the whole head; there were swelling, redness and tenderness over the mastoid region, and the bulging of the membrane came on very acutely. Paracentesis was performed and there was a discharge of about a dram of bloody serum, showing that the mastoid cavity must have been filled with this fluid. All the symptoms were relieved, but the discharge continued for a week or more; the relief came within two or three hours after the paracentesis had been performed. *Capsicum* was the remedy that was administered; the temperature was 102° at the time of the operation, and lasted three days in a milder degree. I felt that it would be an operative case the moment that I saw it, because the inflammation was so intense and so extensive; within two weeks the membrane healed and the hearing was perfect.

The other case was not so aggravated, although it was a bad case; it also recovered with perfect hearing. There are other cases that begin less violently, and show no symptoms of being very serious, and yet under the action of heat and remedies do not do well, but go on to destruction of the mastoid cells. Owing to this fact I feel that, although I am not in favor, as some are, of operating as soon as a diagnosis is made, that we should not depend too long upon the application of heat and cold and of our remedies as our only friends, but watching carefully, and with our best judgment, hold ourselves ready to operate the moment that it becomes necessary.

E. B. Hooker, M. D.: I look upon this disease very much as I look upon appendicitis. There are many cases which recover without operation; there are a few which could not get well without an operation; the important thing, and often the very difficult thing, is to early distinguish the one from the other. There is acute catarrh and there is

suppurative inflammation of the ear, and to discriminate between them sometimes requires the finest clinical judgment and skill. The writer of the paper has spoken of a change of sentiment that has occurred in regard to the use of heat and cold as a means of treatment. This change has taken place, and it is coincident with the general acceptance of the germ theory of disease.

The application of cold which has become so general in such diseases as appendicitis and mastoiditis is efficacious, not simply because it reduces congestion, as was formerly thought, but because cold is un-only the simple catarrhal form of inflammation that is benefited by only the simple catarrhal form of inflammation that is benefitted by heat; but in the suppurative form I know of no treatment that is to be compared to the steady application of cold. I always use remedies at the same time, selected according to the totality of the symptoms, and not infrequently the conditions present, at least in the Connecticut Valley, lead to the use of our old friend China. I was first led to it by the evidence of complicating malarial infection. I am strongly in favor of operating when the moment arrives when surgical methods are less dangerous than delay. When waiting is safe, surgical procedue may be delayed and the curative treatment be given further opportunity.

H. P. Bellows, M. D.: The remedy which in my experience has proved more efficient than any other, in mastoid inflammations, has not been mentioned as far as I have heard, either in the paper or in the discussions; that is *Belladonna.* It is of especial importance in the early stages of mastoid inflammation. The writer of the paper spoke of *Aconite* as useful at that time; *Aconite* in my opinion does not compare with *Belladonna* in the majority of cases. This may be used both locally and internally. I place two or three drops of the tincture on a suitable pledget of cotton and push it into the ear, renewing it every hour or as often as necessary. No other remedy has proved so efficient in my hands.

There is another remedy that I sometimes prefer, when there is a persistant sensation of hammering in the affected parts, and that is *Kali phos.* In the later stages other remedies may come in. I am very much opposed to the use of morphine. This disease is a critical and a dangerous one. Like appendicitis, it needs to be carefully watched and met at its every turn. Therefore, the fact that morphine cloaks and obscures the symptoms makes it a very inappropriate remedy here. We need to know with great exactness the condition of the patient. Without all the information possible about the pain, its character, its locality, its direction, the tenderness of very small areas, we are in the dark, and the patient is incapable of giving us these points when under the influence of morphine.

E. J. Bissel, M. D.: This is one of the rarer kind of diseases, in which there is liable to be a great disparity between the visible symptoms and the internal and actual danger. The symptoms may be slight when the real condition is desperate. In many cases, I may say in most cases, the

indications are clear and no one need be puzzled. Some cases do not seem to be getting on well, and yet the indications for an operation are not clear; these are the puzzling ones and are apt to try the skill and ability of the attending physician. He needs to be sharply on his guard. No hard and fast lines can be laid down for his guidance. It is well to remember a remark of McKean's to the effect that a man with a discharging ear is like a man with a charge of dynamite in his head; it may explode at any moment. We should hold ourselves in readiness to do or to have done everything that may throw light on the subject; we may need to examine the blood, the urine, make lumbar puncture or whatever else clinical diagnosis may suggest as likely to throw light upon the condition of the patient's system.

G. W. McDowell, M. D.: It seems to me that the distinction between mastoid symptoms arising from acute infection and those arising from chronic suppuration has not been dwelt upon enough. Acute cases of mastoiditis following as the result of a cold may very readily be relieved by various applications, by paracentesis or the remedies; but when the mastoid symptoms follow chronic suppuration the chances are that that case is going to be an operative one. Scarcely 1 per cent. of such cases will get well without operation. Local applications, paracentesis or the remedies have but little effect in relieving them. As long as a patient is getting along well, keep up the treatment, but if you come to a point where you are doubtful of the result operate. When in doubt operate. It is impossible in every case to be certain, the most experienced will admit that, and when we are not certain of our treatment give the patient the benefit of the doubt and operate. This is the rule, as I understand it, among the most eminent experts in doubtful cases of appendicitis.

The deceitful nature of this affection, mastoiditis, is well shown by a case that I recently had at the hospital. The patient seemed to be doing well, the temperature was normal, the pulse good, locally it looked all right. Although all the signs were right, yet the patient did not look well about the face. As all the local symptoms had subsided it was thought that he could go home in a few days; he himself had asked if he might not go. Fortunately I went to the hospital the day set for his departure, and on looking him over found him in a rather stupid frame of mind. I operated immediately, and the first chop disclosed a protruding sinus; it was thrombosed. He is going to get well, but if he had been allowed to go home and been treated by ordinary methods he certainly would have died.

Another case of acute inflammation of the middle ear in a child five years of age came in to see me. On examination I found a large perforation in the drum-head, through which pus was discharging freely; I directed the ear to be washed out with warm water every two or three hours. In the course of two or three days the child seemed to be much better, the irritability that had been present at first was lost, the swelling had disappeared, the discharge lessened. I rejoiced and said to myself here is a case that we are going to cure easily and without

operation. Two days later the swelling had all come back and I could press the pus out by pressure on the mastoid region. I operated in a good light, and I found the dura exposed in an area as large as the end of my finger. Death might easily have followed if she had been neglected. You can never tell what is inside the mastoid, and the only safe way is to operate in every case where there is doubt as to how it is going to result.

D. A. MacLachlan, M. D.: The saying "when in doubt operate" reminds me of a case I had a few months ago. In all these cases I think that we are in doubt, and although I am in doubt very frequently about the exact nature of a given case I am never in doubt about some of the measures that have been recommended here. I always use remedies and heat and cold. In the case that I was reminded of by the above saying there had been an operation on the right mastoid for the relief of a pressing pain in the mastoid and temporal regions. The patient had had abscess of both middle ears with scarlatina during childhood, and the ears had both been discharging for a year previous to the operation, with signs of mastoid disease. The operation had been performed, but the pain was not relieved. After eight months' time had pretty conclusively demonstrated that the operation was not going to help, the patient fell into my hands. I examined the ears and found practically nothing in the right ear and only a slight catarrhal discharge in the left. I gave a guarded prognosis and started in to help the patient if I could. After a week's treatment the pains, which were mainly on the left side, were not influenced in the least, and the relatives wanted me to perform a second operation. I was somewhat influenced by the opinion of the old school operator, who had operated upon the patient the first time and did not see any indications that would warrant an operation for the second time. The patient was on the borderland of insanity and I decided to call in an alienist for consultation. The alienist thought him sane, but could not decide upon a diagnosis. He kept his relatives up night and day, and having concluded that they could stand it no longer they were considering the advisability of sending him to some retreat. The result of the consultation was an operation upon the left mastoid. I made the usual operation and found nothing in the mastoid cells, which were exceedingly large, but what appeared to be broken down tissue, degenerated and dark; this was scraped out thoroughly with the curette, but I found no pus. The patient made an uneventful recovery as far as the operation went, and to my surprise and gratification has had no pain since. The signs of insanity have all gone, and he has fleshed up a good deal. The whole thing was a perfect success.

A Member: What was your diagnosis, doctor?

D. A. MacLachlan, M. D.: I do not know. I have not made it out. The cells certainly were not normal; too large and too dark.

E. J. George, M. D.: I suspect that was a case of periostitis. There was no doubt pressure between the periosteum and the bone; this the incision relieved. Several similar cases have come to my notice in my service at Cook County Hospital. These cases had all the apparent

symptoms of mastoiditis, and yet it was a periostitis. An incision deep down to the bone relieved the pain, though the periosteum did not present any marked signs of inflammation. I believe that some of the cases of mastoiditis reported as cured by a simple incision are nothing more than an extension of inflammation from the middle ear to the periosteum in the region of the mastoid.

C. J. Swan, M. D.: The case related by Dr. MacLachlan interested me very much, because I had two cases similar to it. They were cases of severe pain in the mastoid region; on operation no pus was found, but there was a good deal of granulation tissue and degeneration of the mastoid cells, so that they resembled this case of Dr. MacLachlan a good deal. It seems that such a condition produces pain of a persistent character just as well as suppuration. I had a woman fifty-five years old with a similar condition. All the local symptoms pointed to the mastoid region; there was only a slight increase in temperature, 99 or 100°. One ear had suppurated and healed up, the other had not and continued to pain and make trouble. The drum-head was bulging. Although I pierced the drum-head the pain still continued, the temperature rose to a little over 100°. I operated and found the condition very much the same as that described by the doctor. After the operation the pain and all the other symptoms left.

E. J. Bissell, M. D.: I have just dismissed a case of this kind; there was severe pain in the mastoid region, but the middle ear showed no symptoms that would lead one to think of trouble there. The pain was severe and she was operated by making an incision down to the bone; there was not the slightest relief experienced as a result. In a second operation I went into the mastoid cells, and, although I found no pus there, nor anything the matter with them, there was relief of the pain. I dismissed her after six weeks, entirely free from pain; to all appearance the cells seemed normal.

President: Then it was not mastoiditis.

E. J. Bissell, M. D.: Well, what was it then?

D. A. MacLachlan, M. D.: Were the mastoid cells the usual size and color?

E. J. Bissell, M. D.: There was no disease in the cells; they were the usual size.

D. A. MacLachlan, M. D.: There was no question about there not being periostitis in my case. I saw the periosteum, and it was perfectly healthy. The reason that the pain continued after the first operation was because the operation was a superficial one; it went down to the bone, while the real trouble was in the cells. I opened the cells and scraped them out thoroughly.

H. P. Bellows, M. D.: I think that we can plainly recognize in this connection two distinct conditions of the mastoid, both of which are characterized by severe pain. One is neuralgic in character, and an inveterate case is sometimes relieved by an external operation; that is, by an incision down to the bone, and a smooth, boat-shaped channel chiselled in the bone, without entering the mastoid cells or antrum. The

other condition is where there is a smouldering inflammation within the mastoid cells. The cells are more or less filled with a red granulation tissue. The pain is often slight and dull, but is subject to severe exacerbations at times and the liability of springing suddenly into a dangerous state is always present. For this class of cases there is nothing satisfactory but an operation extending into the antrum; nothing short of that will permanently relieve.

J. N. Anderson, M. D.: This discussion reminds me of a case that puzzled me a good deal. A man came to my office with a diagnosis already made of mastoiditis. On examination I could not find any signs of that disease. He could not get a bit of sleep on account of a nervous condition, and begged me to operate upon him. I began to make an examination to see if I could not find the cause of the trouble. When I came to the eyes I found that he had marked exophoria. I put prisms on the eyes and the pain disappeared entirely. Whether it was a psychic effect or the effect of the correction I am not able to say. Certainly there has been no more pain in the mastoid.

Emma L. Boice-Hays, M. D.: About a year ago I had a lady patient suffering with pain in the mastoid region and numbness and tingling in the auricle; a diagnosis of mastoiditis had been made before she came to me. There was a small wen above the back of the auricle, which I removed, and she has had no pain since. I saw her within a week. Another case was a girl, who did have an inflammation in the mastoid; it was the result of a middle ear suppuration, which had been treated by a general practitioner by filling the ear with some powder, a bottle of which was furnished the mother for home use. When I saw her the temperature was 105°; she was having recurrent chills and was in a bad way generally. That night the temperature went up to 106. I wanted to operate, but the consent of the father was necessary, and he was in Dakota on business, trying to get a divorce, so that we had to wait for his consent. I did the best I could with remedies. There was a bridge between the septum and the middle turbinated, which I divided. I used considerable cocaine. The next morning the fever was 103°. When the father's telegram did come it said that he would not stand for the expense; he had been worked that way before, so we continued the expectant treatment. The child got well without operation.

SARCOMA OF THE NASAL SEPTUM.

BY FRED. D. LEWIS, M. D.,

Buffalo, N. Y.

I FIND the literature on this unusual disease very meagre. Some of the authors on diseases of the nose merely touch on it, while others do not even mention it. In fact, those that refer to it at all speak only of sarcoma of the nasal cavities, stating that the growth may spring from the inner or outer wall or from the turbinated bodies. They also state that operation is the only remedy, and that less than half the cases result in recovery. From my experience, I think that the percentage of recoveries should be based, not on the number of cases, but the location. Of the three cases that I have seen, in the first two the site of growth was the middle turbinated, with an invasion of the various sinuses—result, death within a few months.

Case.—The third case, which I wish to present, the growth sprang from the septum, and complete recovery resulted from the operation. The case was referred to me by Dr. S. Wright Hurd, of Lockport, June 8, 1900. A letter was sent with the case, stating that Mrs. H. had trouble with her breathing, and that Dr. Hurd could see a growth, which he presumed was a polypus, and requested me to operate. On examination the growth presented three peculiarities, which led me to suspect something more than a polypus. These were the location, the color and its vascularity. The site of the growth was the middle third of the septum on the right side. I found upon investigation that polypi had been reported to have been removed from this position, but such cases were exceedingly rare, and I am of the opinion that such reported cases have been improperly diagnosed. I believe that true polypi are never found on the septum. The color of the growth I am reporting was a dull red, which we all know is not that of a polypus, which presents a glistening greyish white appearance; sometimes perhaps with a few blood vessels showing on the surface.

The growth was pedunculated, and after its removal with a cold snare the hæmorrhage was so severe that I had great difficulty in checking it. This again was not the usual result following removal of a polypus.

I preserved the growth and sent it to Dr. George R. Critchlow for examination, who reported as follows:

Specimen—Small nasal tumor, size of cherry, attached by short pedicle to septum of nose. Hard, cut surface, grey, containing no fluid.

Microscopical Diagnosis—Probably started as a fibroid polyp, but had degenerated, especially at base, into sarcoma.

A firm capsule covers the whole of polypus, except near the pedicle, where the sarcomatous tissue is most plentiful. A large vessel enters the tumor by the pedicle, and it is very vascular all through the tumor.

Dr. Critchlow's report came to me a few days after the operation, so I sent again for the case, to be sure all of the growth was removed. I found some small granules remaining at the site of the tumor. I curetted thoroughly for some distance about the place of attachment of the pedicle, down to the bony septum. The bleeding was quite profuse, but I felt that the removal was thorough. I instructed the patient that if at any time there was the slightest trouble she should report to me at once.

I had heard nothing more from her when I contemplated this paper, and as I thought the case a particularly interesting one I went to Lockport to see her. I found her feeling very well, and the mucous lining of both nostrils to all appearances normal. She was, however, about seven and one-half months pregnant, and as the tumor appeared a few weeks after the birth of her last child I shall be interested in knowing whether there will be a recurrence after her coming confinement.

There has been so little written on the subject of nasal sarcoma that I think all who have been fortunate or unfortunate enough to have had cases should make it their duty to report them with treatment and results. I also think that most of us are too prone to remove growths without determining accurately the exact nature of them. It is possible that many sarcomatous growths have been removed in the early stages of their development, and recovery resulted, when the tumor was supposed to be a simple polyp. Let us all be more careful in our diagnosis and give the society the benefit of our experience.

DISCUSSION.

C. E. Teets, M. D.: I have now under my care a case of osteo-sarcoma, involving the nose, post-nasal space and the soft palate; it is not in an active state, for it has existed for eleven years. Various treatments have been tried with little or no success. The galvanic cautery is the only thing that keeps it in control. At one time it had reached down to the larynx, so that the patient was threatened with suffocation from the growth choking off his breath. I removed a piece one and one-half inches long, which gave entire relief, and from time to time I have been removing portions as rendered necessary by its growth.

A. Worrell Palmer, M. D.: While on the subject of sarcoma I will take the opportunity of reporting progress on a case which I related two years ago, treated with mixed erysipelatous and bacillus prodigiosus toxins. The former report was made four months after beginning the treatment; now after two and one-quarter years there has been no return of the condition and the patient is in general good health.

ACUTE GLAUCOMA.

BY WM. W. BLAIR, M. D.,

Pittsburg, Pa.

IN dividing a large subject into its recognized classifications, and apportioning the several subdivisions to different individuals for presentation, it appears to me that we can work to much greater advantage than where one writer attempts to cover the entire field.

This, I think, is particularly true when we have before us the subject of these papers, namely, *Glaucoma;* a disease which, on account of its relative frequency, its disastrous course when left alone, and above all its curability when treated in an early stage, constitutes one of the most important in the whole range of eye diseases.

With regard to its frequency, some idea may be formed by reference to the statistical tables of Oppenheimer in the United States, Trousseau in France, and Magnus in Germany, which tables agree in showing that in the three countries named a trifle over 10% of the blind suffer from glaucoma. Hence it seems to me most desirable that the subject should receive the widest possible consideration.

The portion assigned to me is Acute Glaucoma, and this I take to include both the primary and the secondary forms. Glaucoma may be defined as a complex morbid process, dependent upon, or supposed to be dependent upon, an excess of pressure within the chambers of the eye.

In establishing our premise that increased intra-ocular pressure is the real underlying cause of the entire train of symptoms which make up the clinical picture of the disease, let us take up successively the different cardinal signs.

First. Haziness of the cornea.

This symptom, which is invariably present in acute glaucoma of the congestive variety, was shown long ago by Arlt, and subsequently proven by Fuchs, to be due to œdema.

There is probably always some fluid between the corneal lamellæ, but it is only during increased pressure that distension of, and stasis in, the spaces occurs. The œdema always disappears promptly upon a reduction of the pressure.

Second. Shallowness of the anterior chamber, which is almost always present, is due to a pushing forward of the lens and the iris, and has been shown by Treacher Collins and Priestley Smith to be due to accumulation of fluid in the posterior aqueous chamber.

Third. Excavation of the papilla, or "glaucomatous cupping" of the disc, occurs as one of the most constant signs and is due to a gradual recession of the lamina cribrosa, which seems unable to resist for long the abnormal pressure, though it seems to depend more upon the *degree* rather that the duration of the pressure.

Fourth. Loss of vision is admittedly due to the abnormal tension, though several observers have accounted for the manner in which the pressure acts in reducing the visual power differently. No doubt the haziness of the cornea also contributes largely to the general obstruction.

By some it is held that it is due to direct pressure on the fibres of the optic nerve, while others hold to the belief that it is due to the ischæmia of the retinal blood-vessels.

Fifth. Restriction of the visual fields, which is identical in point of time with the reduction of general visual acuity, must be referred to the same cause as the latter, and is, like it, ascribed variously to optic nerve pressure, and to interference with the vascular supply to the retina.

Sixth. Anæsthesia of the cornea, which seems to bear a more or less constant relation to the corneal haziness, is ascribed by Fuchs to the same cause, œdema—stating that an increased amount of fluid finds its way through the nerve channels in Bowman's membrane; the nerve fibres are thus surrounded, infiltrated and probably pressed upon, and thus paralyzed.

Seventh. The spontaneous pulsation of the retinal arteries is almost certainly due to the impediment to the blood flow offered by the increased tension, as it invariably disappears with the subsidence of the high intra-ocular pressure.

Eighth. Pain, which varies from a dull, dragging ache to the most violent neuralgia, is probably caused by the congestive irritation of the fibres of ophthalmic division of the fifth nerve.

Taking the above symptoms all together, which constitute the chief pathognomonic signs of acute glaucoma, we are, I think, amply justified in assuming that the over-tension is the prime causative factor in the disease.

Hence it will not be too much to say that all research into the ætiology

should begin at this point. Thus *two* theories were evolved to account for such increase—first, hypersecretion; second, retention of secretion. The former was the theory maintained by the older ophthalmologists, including Von Graefe and Donders, but has been in recent years almost universally discarded; hypersecretion has never been proven, and taking into account the well-established laws governing hydrostatic pressure, which show such pressure to be exerted with equal force in all directions, it is impossible to conceive how the pathological changes marking the glaucomatous condition could be thereby produced.

The establishment of the alternative, or RETENTION THEORY, was made possible through the work of Leber, who in 1873 demonstrated the escape of aqueous fluid at the angle of the anterior chamber, thus paving the way for the greater discovery of Knies and Weber, who independently found that in eyes blinded by glaucoma this outlet is almost invariably obliterated; and in this manner we have come to our present knowledge of the true nature of the condition. A thorough understanding of the underlying causes of this complex morbid process demands that a careful laboratory study of the mechanical principles involved be added to careful clinical observation, and that is perhaps the reason why the "retention theory" has been so slow of general acceptance, for the most acute observer, studying the matter from a purely clinical standpoint, sees nothing of the normal filtration process, and little of the special conditions which disturb it in the glaucomatous condition.

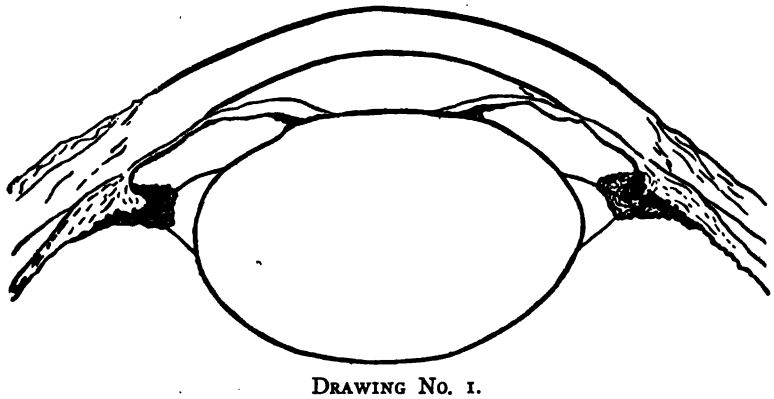
A study of the physiology involved teaches us that the secreting surface of the ciliary body furnishes a fluid which nourishes the vitreous, and the lens, and replenishes the aqueous chamber. This fluid passes mostly forward through the pupillary area into the anterior chamber and escapes thence by filtration through the ligamentum pectinatum into the spaces of Fontana and Schlem's canal and thence into the veins connected therewith.

Whether or not there is any continuous flow backward it is difficult to prove, but it has been shown that the hyaloid membrane is permeable and that it is possible for fluids to escape by way of the perivascular spaces in the optic nerve; but in the human eye it is thought that the normal passage of fluid at this point is practically nil—so that for the purposes of study we may regard the filtration from the angle of the anterior chamber as the only avenue of escape.

Intra-ocular pressure may become abnormally high, by reason of the blocking of the filtration angle in the periphery of the anterior chamber,

as, for instance, the accumulation of the detritus from a broken up lens—the forward dislocation of the iris base—or by the exudation of blood or serum from the iris, or by the increase of the intra-ocular contents.

It will thus be seen that the process is to be considered either as a local affection—as where the condition is set up by a purely local disease, or by traumatic or surgical injury, whereby the normal relation of the parts is disturbed—*or,* as a manifestation of systemic disorder, as in rheumatism, syphilis, nervous affections and disorders of the blood or the blood-vessels. So that it is of great importance to try as far as possible to locate the cause—that the treatment may aim to secure



DRAWING NO. 1.

Represents the section of an eye blinded by secondary glaucoma following neglected iritis; exclusion of the pupil, accumulation of fluid in the posterior chamber, displacement of the iris, closure of filtration angle.—Smith.

not only immediate relief, but immunity, if possible, from a second attack.

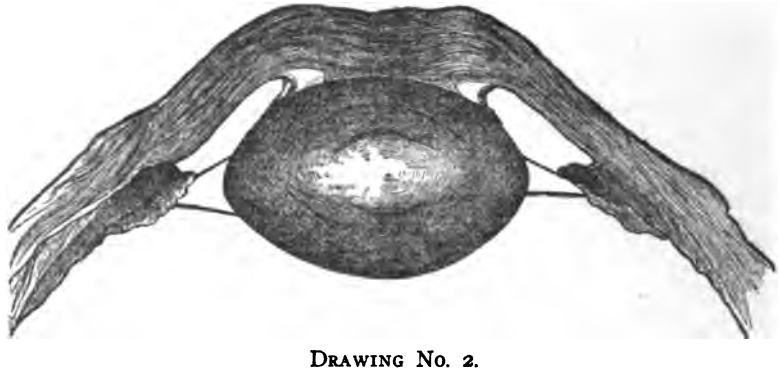
Looked at in the light of our more recently acquired knowledge of the retention theory—it is more easily demonstrated if we consider the secondary variety first. Permit me to ask your attention to drawing No. 1, which represents a section of an eye blinded by secondary glaucoma following neglected iritis; exclusion of the pupil, accumulation of the fluid in the posterior chamber,—displacement of the iris,—closure of filtration angle.

Drawing No. 2, section of an eye blinded by secondary glaucoma following a perforating ulcer of cornea—lens adherent to corneal cicatrix—pupil margin adherent to lens—anterior chamber abolished, access to filtration angle cut off,—fluid imprisoned in posterior chamber.

Drawings Nos. 3 and 4 show the manner in which a secondary glaucoma may be set up by the occurrence of intra-ocular growths—and illustrate perfectly Priestley Smith's contention that in these cases the glaucomatous attack is always delayed until a forward displacement of the lens has been brought about, with the consequent closure of the filtration angle.

In No. 3 we see the growth, which has not yet caused the usual displacement of the lens forward—the eye having been enucleated before a glaucomatous outbreak had been set up; No. 4 shows a similar condition much further advanced—and depicts an eye that had been removed during a glaucomatous attack.

I may say that I have just had a perfect example of this phase of



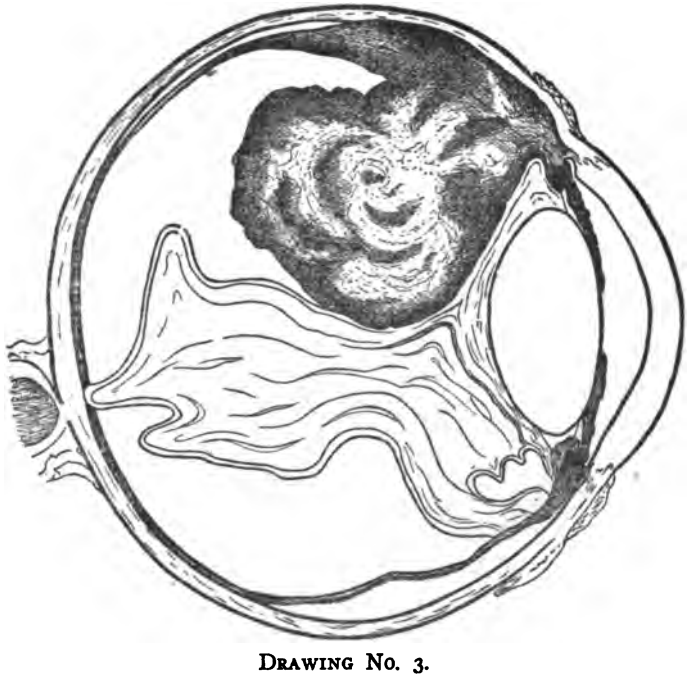
DRAWING No. 2.

Section of an eye blinded by secondary glaucoma following a perforating ulcer of the cornea; lens adherent to corneal cicatrix, pupil margin adherent to lens, anterior chamber abolished, access to filtration angle cut off, fluid imprisoned in posterior aqueous chamber.—Smith.

the disease in a woman sixty years of age, who presented herself for treatment for an intra-ocular tumor, which subsequently proved to be a sarcoma of the choroid, but who refused operation until the sudden onset of the inevitable glaucoma, when the eye was enucleated.

Primary glaucoma, which is of far more frequent occurrence than the secondary form, may be looked upon as a local manifestation of some general systemic disorder, when its origin can be traced to gout, syphilis, rheumatism, disorders of the sympathetic nervous system, or alteration in the circulatory system, either in the blood-vessels or in the blood itself; hence it becomes incumbent upon us to study each case with a view to locating the underlying cause that our treatment may if possible reach the seat of the disorder.

While we may not find it so easy to apply the principles involved in the so-called retention theory to primary glaucoma, there is nothing in the clinical or pathological findings of the disease which is incompatible with the theory, nor has it been possible to disprove it in any extent—it is simply more difficult to demonstrate how, in what may be called idiopathic glaucoma, the *blocking of the filtration angle* is brought about. Recent investigation has, however, brought out some



DRAWING No. 3.

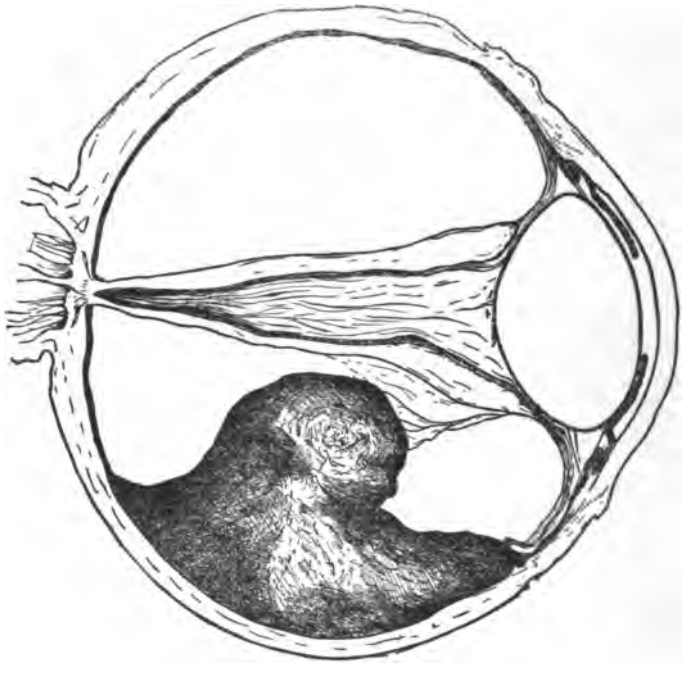
Intra-ocular tumor, which has not yet caused displacement of the lens; the eye having been enucleated before a glaucomatous outbreak had been set up.—McHardy.

new and very significant facts, which, if they have any weight, tend to the support of Priestley Smith's hypothesis.

From the investigation of Leber, Knies, Weber, Smith, Collins and others we are justified in taking as an established fact that in practically all eyes blinded by glaucoma a careful examination will reveal a more or less complete blocking of the filtration angle, which is amply illustrated by comparing drawing No. 5 with No. 6; the former represents a section of the healthy eye of a man of fifty-seven years, while the

latter is from an eye blinded by acute congestive glaucoma, showing the ciliary processes swollen and advanced; the iris is pressed against the cornea, but is not adherent.

A marked characteristic of glaucoma is its decided predilection for the older eyes—that is, taking the statistics from a vast number of cases we find that in each succeeding decade of life there is an increase in the frequency with which it is found. According to Priestley Smith this



DRAWING No. 4.

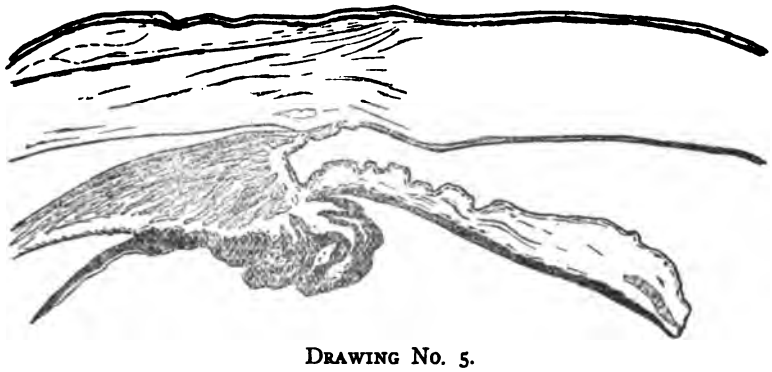
Intra-ocular or tumor which further advanced than No. 3. Lens displaced forward, iris and ciliary body crowded back into filtration angle; filtration cut off.—McHardy.

may at least in part be accounted for by the fact that though the eyeball in all its parts reaches its maximum size very early in life, we find the lens continuing to increase in size until after middle life—thus crowding upon the space at its rim, and in this way allowing less room for any increase in volume of the iris or ciliary body, which would arise from turgescence of these parts, thus when such turgescence or inflammation does arise the filtration angle becomes crowded upon, the spaces

of fontana compressed and filtration interfered with or checked entirely.

Whether a pronounced determination of the blood to the head, such as occurs under strong emotional excitement, as anger, grief, disappointment, sorrow and the like, would be sufficient to account for such a localized congestion is a matter for speculation—the only other explanation that has been offered is that the sudden increase in the intra-ocular pressure is in some way brought about by the influence of the sympathetic nervous system—and this is scarcely less difficult of demonstration.

The part played by influences acting through the sympathetic nerv-



DRAWING No. 5.

Section of a healthy eye of a man of fifty-seven years.—Collins.

ous system in the causation of glaucoma is not yet understood, though it seems to me we are in the way of finding out more about it. That excitation of the sympathetic nervous system in some part may precipitate an outbreak of glaucoma has long been known—and theories, recognizing in this influence a causative factor, have been evolved, but have not been susceptible of complete demonstration.

The sympathetic nerve fibres of the eye supplying the iris, sclera, retina and choroid, as well as the ocular blood-vessels, pass through the superior sympathetic cervical ganglion, and as is known an irritation of these fibres will cause, first, a constriction of the intra-ocular blood-vessels; second, a contraction of the circum-bulbar muscles; third, an increased action in those elements constituting the aqueous humor; hence the excision of these fibres and the ganglion has been advocated and practiced as a cure for glaucoma, and though the results have not

been brilliant they have served to direct attention to the probable connection between the two.

Taking the so-called retention theory as a basis, it is not difficult to find the predisposing cause in the circum-lental space as above described, and the exciting cause in the sympathetic nervous system. As logical proof of the intimate connection between the two we have the reports of Jonnesco, in Bucharest; Ball, in St. Louis; Suker, in Toledo, and others who have performed the operation of excision of the cervical ganglion.

DRAWING No. 6.

Section of an eye blinded by acute congestive glaucoma; ciliary processes swollen and advanced; iris pressed against cornea, but not necessarily adherent.—Collins.

These reports show that the operation, while the effects upon vision are not uniform, will relieve the pain promptly and reduction of the tension nearly always follows more or less gradually.

Following out the retention theory, which has been so clearly worked out and ably defended by Priestley Smith, it would seem that in primary glaucoma, no less than in the secondary variety, the same causes are at work and bring about identical results, the difficulty in proving the theory here being that the cause lying so much deeper there is little to be seen macroscopically or to be observed clinically; one point seems to be established, however, and that is that the nature of the predisposition to glaucoma must be closely bound up with those known structural changes incident to advanced life.

Much has been written and many experiments have been made in the effort to clear up the doubtful points in this phase of the pathogenesis. Little has been gleaned, however, of recent years, but nevertheless we have come to accept, quite generally, a belief in the existence of what I

may term the "glaucomatous habit" that is to say, that, given a certain bodily habit, or temperament, and subject the individual to any of the known exciting causes, such as exposure to colds, extreme fatigue, bringing the eye under the influence of a mydriatic, etc., and you have immediately produced a glaucomatous outbreak.

As to what constitutes the glaucomatous habit, and how to recognize it when present, before the unmistakable symptoms of increased pressure show themselves, I fear there is much yet to be discovered. That primary glaucoma is most frequently but the local manifestation of some general disorder is evident from the fact that it is nearly always bilateral. We find our patients frequently either rheumatic, syphilitic or suffering from some impairment of the circulatory system; all of us have seen cases of retinal hæmorrhage, which have been followed in a short time by a glaucomatous attack; so frequently has this sequence been observed that the connection between the two would appear to be established.

Again there are those cases of retinal hæmorrhage occurring during the course of a nephritis or diabetes which are not followed by an increase of tension; hence it would seem that it is the state of the *blood vessels* and not the blood itself which should bear the blame; and this state of the vessels, from whatever cause arising, has been found to be usually an endarteritis, phlebitis or thrombosis. Among the *exciting* causes of acute glaucoma there is one occurring with sufficient frequency to merit more than passing mention, and that is the injudicious employment of a mydriatic drug in an eye predisposed either by age or individual tendency to the glaucomatous state.

We are frequently having our attention called to the introduction of some new mydriatic agent, which is declared to *not increase the tension,* and in my experience these new agents have invariably proven disappointing; and it seems to me this must follow, as from our present understanding of the matter when effective dilatation of the pupil takes place the circum-lental space must be encroached upon, with a possible disastrous result always imminent.

Treatment.—The treatment of glaucoma falls naturally into two divisions—the operative and the non-operative. With regard to the former iridectomy stands first, and had Von Graefe done nothing more for ophthalmology his discovery in 1856 of the curative power of iridectomy would have secured him imperishable fame. Though we are not yet sure of the method of its curative action, the fact remains that iridectomy does cure glaucoma. To be most successful, however,

it must be through a broad incision, set as far back from the cornea as possible, to still allow of an entrance into the anterior chamber; following this incision, the excised iris portion must be broad, and go to the iris base, and should be an absolutely clean cut, that no ragged edges nor tags be left to become incarcerated in the corners of the wound.

The only other operation which has been followed by any measure of success in these cases is sclerotomy, and while my main reliance is in the operation of iridectomy yet in suitable cases, as, for instance, in a secondary glaucoma, where the iris is bound down as a consequence of an old plastic iritis, which precluded the possibility of obtaining a good section, I have been surprised at the results achieved by sclerotomy. The non-operative treatment will consist first in the local applications of myotics which are especially in place during the prodormal stage, and which may ward off a threatening attack and may even hold the condition in check for a time—or at least until one of the operative measures can be instituted—as delay is sometimes unavoidable; indeed, some operators prefer to have the case under the influence of a myotic for twenty-four hours previous to operating, in order to reduce the tension, clear up the corneal haze and deepen the anterior chamber.

I have incidentally referred to the removal of the superior cervical ganglion as a curative measure, but as the procedure has been in vogue but a few years its status cannot be said to have been clearly established. However, it would seem, from the increasing number of reports of cases operated upon, that it is increasing in favor; so far it has proven more applicable to the chronic forms of glaucoma, though it is advocated in acute glaucoma where iridectomy is refused, or where the latter operation has been performed unsuccessfully. The beneficial results claimed for it are the relief of pain, reduction of pressure and in some cases a recovery of the field.

However, the beneficial effect of the myotic treatment is usually transitory and operative measures have generally to take its place sooner or later; that this is not invariably the case I would instance a case which came under my observation, where seven years ago I was called in consultation with a brother oculist over a case of acute glaucoma of pronounced type in a woman of sixty-two years of age who refused operation and yet whose vision returned from being able to count fingers at 2 M. to almost normal, under the regular instillations of Eserine sulphate, and remains good to this time (the Eserine was continued at gradually lengthening intervals for about six weeks).

The myotics employed are usually Eserine sulph. or Pilocarpine muri-

ate used alone, or, as has been recently recommended, combined with a small amount of Cocain. Wickerkiewisz has recently strongly advocated the continued application of a combination of all three drugs in the following proportions:

Pilocarpine mur.	0.02
Eserine sulph.	0.01
Cocain mur.	0.01
Aquæ destill.	10.0

This solution I have used in two cases, but cannot report unusually good results. The other phase of the non-operative treatment I consider last, but not by any means of less importance; in fact, whether we operate, or are forced to be content with the palliative treatment by means of myotics, we must, from the start, study these cases and treat them generally.

From the foregoing it will be readily seen how important a role is played by the conditions of general health. We must continually strive to get our patient into a condition approximating health by strict attention to diet, avoidance of constipation, and any slight disturbances of the normal functions must be guarded against, as well as to insure as far as we can mental equilibrium by seeing that they do not give way to any of the violent emotional impulses as anger, grief or fear, as these latter excitations are so frequently provocative of a glaucomatous outbreak.

Logically my subject ends at this point, as the homœopathic treatment is to be fully treated of in the papers to follow. However, I would say that medicinally my plan is to avoid attaching too much weight to the eye eymptoms, as I think we are prone to do, but to try and get our similimum on broader lines so as to more completely cover the case, for I am convinced that in this way we can strengthen our hands whether it be for operative or the non-operative plan of treatment.

DISCUSSION.

Dr. Geo. A Shepard: Dr. Blair has covered his subject so thoroughly there is very little left for one to say.

My experience has led me to feel that hyper-secretion is a causative factor in a fair proportion of cases of acute glaucoma. In our loyalty to the retention theory we ought not to ignore the positive signs of hyper-secretion. Although retention is the esential feature in most cases, over-activity of the ciliary body and sudden distention of the choroidal vessels play an important part, at least in starting the vicious circle. Many cases of acute glaucoma have been recorded following great sorrow,

fright or a condition of extreme sympathetic stimulation. I have seen marked increased tension following capsulotomy in an aphakic eye where the iritic angle was widely open and where there was no entanglement of the iris in the wound; this was probably due to the dragging in the ciliary body.

In order to avoid the distressing occurrence of an attack of glaucoma after the administration of a mydriatic, we should notice carefully the diameter of the cornea, relative to the size of the eyeball, and if it is below the average avoid its use except as a last resort.

Treatment ought to consider the constitutional conditions which may effect the osmotic properties of the zonule and the tissues of the iritic angle, as well as nervous and vascular changes which predispose to congestion and over-secretion of the ciliary body.

When the anterior chamber is very shallow it is my practice to precede iridectomy by posterior sclerotomy, turning the knife in the wound. The relief of pressure in the posterior chamber by this method is gradual, thus avoiding the danger of hæmorrhage. In a few hours the iris recedes, the eye absorbs Cocaine more readily and iridectomy can be made with ease and with little pain to the patient.

THE OPERATIVE AND NON-OPERATIVE TREATMENT OF GLAUCOMA.

BY A. B. NORTON, M. D.,

New York.

THE question as to operative or non-operative treatment of glaucoma is one that has been somewhat of a mooted point in the non-inflamatory form of recent years, and it presumably was the idea of our president in selecting this subject for one of our papers to draw out in the discussion the opinion and experience of our members.

I accepted this subject, believing that an exchange of experience in the treatment of this disease would prove interesting and profitable to all of us, and with the number of papers we have upon glaucoma the discussion should certainly bring out the best method of its treatment.

Let us commence by dividing glaucoma into two classes, the inflammatory and the non-inflammatory form. The latter or non-inflammatory glaucoma, or as I prefer to call it the glaucoma simplex, is in my opinion the characteristic or typical variety of glaucoma. Not that this is the most frequent form of glaucoma by any means, but accepting as we do the definition of Priestley Smith, that glaucoma is "an excess of pressure within the eye, plus the causes and concequences of that excess," we have in simple glaucoma the real " excess of pressure within the eye" to deal with and not the inflammatory symptoms which may be either the cause or the consequence of that excess. Believing then that glaucoma is an excess of pressure within the eye, the indicated treatment will then necessarily be directed primarily to the lowering of the tension, or the excess of pressure within the eye.

In glaucoma simplex we have simply an excess of pressure with all the accompanying symptoms due simply to the mechanical effects of this increased pressure, which may go on, and too frequently does, to complete blindness with no inflammatory symptoms.

The degree of this excess of pressure may vary materially in different cases, and yet lead to the same end, blindness. I have seen cases of this variety, where it was impossible for me to say that the tension was actually increased, and yet from the steady progress of the condition and the characteristic symptoms due to an excess of

pressure and relieved upon decreasing the tension, I was convinced that the case was one of glaucoma. Again, I have seen cases of glaucoma simplex with a tension of + 3. The ultimate results, if uncorrected, will, I believe, be the same in either case. The difference being simply in the length of time before the pressure destroys the sensitiveness of the perceptive elements of the eye. In other words, a slight excess of pressure continued for a long time will cause the same destruction as a more marked excess will in a proportionately shorter time.

Glaucoma simplex is much slower in its course than the inflammatory form; the tension as a rule is lower and coming on much more gradually allows of greater time for its treatment, which, therefore, in my opinion should be far more conservative. In this form of glaucoma it will often require weeks or months, and in some cases even years, to cause the same loss of vision that we may have in acute glaucoma in days or even hours.

We must, however, always bear in mind that glaucoma simplex may at any time terminate in an attack of acute glaucoma, and the patient should therefore be warned of this possibility and the necessity of immediate action whenever this should occur.

In the non-inflammatory glaucoma I believe we should reserve operative measures until we have watched our case for weeks, or even months, under other methods of treatment. I have under observation today patients who have had glaucoma simplex for years with no failure in vision in all this time. One case, will come to me I should say about every two or three months, with a return of iridescent vision and a diminution in the acuteness of vision. In this case the use of Eserin, one-fifth per cent., and *Gelsemium* internally will relieve all of his symptoms and clear up his vision within a few days.

In the simple glaucoma I believe that so long as we can hold the disease in check by non-operative methods it is better to do so. I have been brought to this decision because I have seen a number of cases that, in spite of repeated operations of various kinds, each relieving the tension for a time, the condition has steadily progressed to blindness. In these cases I have questioned myself as to whether these cases might not have done better without operations, as I certainly do not believe they could have done worse.

My experience leads me to believe that, so far as our present knowledge goes, some cases of non-inflammatory glaucoma will go on to blindness under any treatment now known. That other cases will be checked, or, we may say, cured, by either non-operative treatment or

by operations. I am fully aware that I am taking radical grounds, contrary to the opinion of nearly, if not all, of our best authorities in the statement just made, but this opinion has been forced upon me by my experience.

I recognize that this may be dangerous precept to teach; that I cannot support these statements by the evidence of others, and that I shall be criticised for making them, but it seems to me best to give expression to my honest conviction, with the caution to others not to follow blindly this suggestion, but to determine for themselves. I must admit that I am often in grave doubts as to what to advise in some of these cases. My practice now is to first try to control the tension by the use of myotics, massage of the eyes, close attention to the general condition of the patient and the use of the selected remedy. As to massage of the eyes in glaucoma, I have followed the method recommended by Gould.*

The technique is simple and may be carried out by the patient and nurse. He begins by alternate palpation, as in estimating tension, but slowly, and movements increase slowly and softly and the release of pressure is gradual, not sudden. Palpation should be through upper lid, with eye-ball in position of extreme adduction, normal forward looking, extreme abduction, and extreme depression; in extreme elevation the lower lid is used. In this way three-fourths of the globe is operated upon. From three to five minutes are usually required to bring about normal tension. If after thorough trial the disease is steadily progressing, and especially if there is rather rapid failure, I do not feel justified in withholding operative measures, and I then resort to either a sclerotomy or an iridectomy. The advantages of sclerotomy are that it may be repeated a number of times; there is no disfigurement, and if not successful iridectomy can still be tried.

All that we can expect in glaucoma simplex is to hold the vision at the point it is at the time of the operation, because it has usually come on so gradually that the increased pressure has caused permanent impairment of the vision before the tension is reduced by operation.

It is, we believe, generally admitted by all that the results from iridectomies in simple glaucoma are much less favorable than in inflammatory glaucoma. In this connection we will quote the statistics of Horner, the only ones at hand, who from 1861 to 1881 made 103 iridectomies for simple glaucoma and 149 for inflammatory glaucoma with the following results:

*Canadian Journal of Medicine and Surgery, 1899.

	Inflammatory Glaucoma.	Simple Glaucoma.
Improved	72.5 Per Cent.	22.3 Per Cent.
As before operation	11.5 "	37.0 "
Partly retained	10.0 "	23.0 "
Not improved and ultimately lost	6.0 "	17.7 "

Zentmayer and Posey, in A Clinical Study of One Hundred and Sixty-Seven Cases of Glaucoma Simplex,* close as follows: "As operative procedures are always to be deprecated when other measures are equally valuable, Eserine should be employed in all cases of the disease. If at the end of a month the extent of the fields has diminished iridectomy should be resorted to, as there will be nothing further to expect from the action of the drug. If at the end of that time, however, an improvement is noted, as evidenced by a study of the field, the drug should be continued, as there is reason to expect that a beneficial action will be exerted for ten months upon the extent of the field and fifteen months upon the visual acuity. After an iridectomy is performed there is ground to believe that the course of the disease will be checked for a period of eighteen months in 50 per cent. of the cases. Eserine is powerless in 20 per cent., iridectomy in 10 per cent. of the cases. So that 10 per cent. of all cases of simple glaucoma will not be benefited despite all therapeutic measures which may me employed."

As to the efficacy of internal remedies I am not prepared to state. I always use remedies in every case of glaucoma, and believe that they contribute materially to any good results that occur. But so long as the case is at the same time under other treatment, I do not think we are justified in claiming the results as due to the remedy. Glaucoma is too serious a disease for me to assume the responsibility of treating it with remedies alone. We know that there is an increased pressure within the eye that is destroying the vision by its mechanical pressure, and the first indications are to reduce that tension as soon as possible, and, knowing that myotics and operations serve to lower the tension, I do not believe we are justified in treating the case without them.

As to acute glaucoma, I believe nearly all authorities are agreed upon the value and necessity of operations if not very promptly relieved by myotics. My practice in all cases of inflammatory glaucoma, if not over one week's duration when first seen, is to first try, for not over three or four days, myotics, massage and the indicated remedy; if

*Archives or Ophthalmology, Vol. XXIV., p. 378.

there is not decided gain in the acuity and field of vision by the tenth day of the disease to resort to operative measures. As a rule, I do not delay as long as ten days before operating, because before that there is usually a decided change for the better or worse. If the former, the treatment is continued so long as positive improvement is being made, while if there is decided failure operation is at once resorted to. In inflammatory glaucoma the increased tension must be very promptly relieved, as in some cases blindness will result in a very few hours. Usually, even though almost complete blindness, if the loss of vision has only been for a few days, immediate relief of the tension will restore a large portion of the vision that has been lost. I have seen cases of acute glaucoma where the vision has been almost completely lost restored nearly to normal by prompt relief of the tension; in some cases by Eserine, but more frequently by an iridectomy. To illustrate, I recall one case of acute inflammatory glaucoma in each eye, which had existed for five days when the patient first consulted me. At this time the vision was $^{15}/_{200}$ in each eye and tension + 2. The case was immediately sent to the hospital and a one per cent. solution of Eserine instilled into each eye every two hours for three days. At the end of this time there had been no decrease of the tension, and if anything a slight loss in the vision. An iridectomy was made in each eye, with immediate relief of all symptoms, and a final restoration of vision to $^{15}/_{20}$ in each eye.

To summarize. My belief is that in glaucoma simplex the case should receive non-operative treatment in every instance until myotics and other treatment has been tried for several weeks at least, unless there has been a rather rapid failure in the fields. If the disease is not then being checked sclerotomy should first be tried and later iridectomy.

In acute or inflammatory glaucoma myotics, etc., should be first tried, but if no gain is made within a week, or earlier if there is progressive failure, iridectomy should be made.

DISCUSSION.

Dr. Emma L. Boice-Hays: Had this paper been read ten years ago it would have provoked a much livelier discussion than at the present time. For in eye diseases, as well as those in other parts of the body, the pendulum of cure is swinging far out away from the knife and bringing more conservative measures.

Dr. Norton says: "Believing that glaucoma is an excess of pressure within the eye, the indicated treatment will then, necessarily, be directed primarily to the lowering of the tension, or the excess of pressure within the eye." Further on he says "that some cases will be checked or cured, while others will go in spite of treatment to blindness."

In the definition of glaucoma, "that it is an excess of pressure within the eye," it seems to me that it would be better to add "caused either from excessive additions to the physiological contents of the eye or from insufficient removal of contents."

If there is *insufficient removal* of contents, operative treatment would prove the only succesful method. While, if the secretion was *excessive,* any remedy which would check this would prove efficacious. And if the two were combined, that is *excessive secretion* and *insufficient removal* (and there is no reason why they could not be), then any method or combination of methods would prove useless.

In some varieties of acute glaucoma—for instance, that arising from serous cyclitis—where the infiltration angle is widened instead of being narrowed—but clogged with albuminous fluid—*operating* and relieving the anterior chamber of its contents acts as a palliative and gives a chance for remedial measures to cure.

These variations in *cause* would, in a measure, explain the difference in results. If Dr. Norton would differentiate as to *cause* he could tell more accurately *which* cases would go on to blindness.

Personally, I can tell varieties much better *later* on in the case. If blindness follows every effort, I conclude that it was a combination of causes, against which every effort would prove fruitless; if the eye *recovers,* it was skill in diagnosis and treatment.

In glaucoma simplex I beg to differ with the doctor with regard to telling the patient the full extent of the danger to eyesight and the possibility of an acute attack of the inflammatory variety, or, in fact, about naming the disease. With all the literature that is distributed and the number of young surgeons watching a chance to operate, the patient can scarcely avoid the dangers of quackism.

That is, if he knows the name of his disease. Without this knowledge we can usually keep the patient under observation until relief is afforded.

About ten years ago I began an experience of this kind. Two ladies, both with non-inflammatory glaucoma. One was told the nature of the disease and prognosis, the other was not.

The one I did not tell has perfect vision, and has had no other treatment than mine. Other oculists examined the eyes and confirmed my diagnosis. The other has been in the hands of no less than four oculists; has given Glens Falls Sanitarium a testimonial of perfect cure from glaucoma; has had an iridectomy; has never had a moment's pain; is now again under my care stone blind and with a corneal ulcer. She says she wishes she had let well enough alone.

As far as I could judge the cases were similar.

I could multiply cases. As most of my patients with this disease are women my experience may be different from the majority.

Unfortunately for the fuller discussion of this paper, I use the same methods as Dr. Norton in glaucoma simplex. However, I think he has done the society great good by telling his views, coming, as they do, from one in authority and so eminently successful.

In my earlier days—like most young surgeons—I advocated the knife

immediately, but in the last ten years I either do not have the same class of cases or else non-operative treatment gives more generally better results in non-inflammatory cases.

In the inflammatory form I have performed iridectomies with good results only to find that later on the vision was lost.

I have seen similar cases with similar results from other oculists. So that now an operation is a last resort, except to relieve pain.

In conclusion, will say that my results will compare favorably with those of others who operate every case which they even suspect of being glaucomatous.

THE HOMŒOPATHIC TREATMENT OF GLAUCOMA.

BY E. H. LINNELL, M. D.,

Norwich, Conn.

IN endeavoring to present an accurate and reliable estimate of the influence of homœopathic therapeutics upon this serious affection, which is so often the cause of blindness, I have not confined myself to my own limited experience, but addressed letters to various oculists of wide reputation and acknowledged ability, both in diagnosis and treatment, asking for expressions of opinion and clinical testimony.

I want to express my appreciation of the uniform courtesy shown by the gentlemen to whom I wrote in replying promptly and fully to my questions.

Their opinions as expressed in their replies coincide unanimously with my own, that we are not justified in relying upon internal medication alone in the treatment of glaucoma. Nearly all are in the habit of prescribing remedies in connection with local treatment, and the faith in their efficacy seems quite general, but does not rest upon a scientific basis. We cannot demonstrate that homœopathic remedies have either caused or cured glaucoma.

Such being the case, we are not justified in neglecting the use of myotics, which have a known and recognized influence in reducing tension.

Valuable testimony as to the influence of remedies could be gathered in our public institutions by treating a number of cases with myotics alone, and an equal number with myotics and homœopathic remedies together, and comparing results. I wish this might be done.

The large number of remedies mentioned in the correspondence as having afforded probable benefit is presumptive evidence that the indications for their employment are not very definite or their results uniform or trustworthy. Twenty remedies were mentioned, and in no instance with anything more than general indications for their employment. No special or characteristic symptoms were given for any of them. Of these twenty remedies, eleven were mentioned but once, viz.: Eserine, Colocynth, Ignatia, Phosphoric acid, Sepia, Physostigma, Jaborandi, Cedron, Prunus, Aconite and Plumbum met. Four were mentioned

twice, viz.: Spigelia, Pilocarpine, Rhus, Arsenicum and Belladonna. Osmium was recommended by three oculists, Phosphorus and Bryonia by four, and Gelsemium by ten. Our literature furnishes occasional instances of cures by the latter remedy in connection with Eserine used locally. (See two cases reported by Boyle in the Trans. N. Y. State Soc. for 1890 and another by Norton in the same publication.)

Gelsemium, therefore, seems to be the remedy most deserving of confidence, the best supported by clinical testimony, and, therefore, the first to be considered. In its pathogenesis we find the eye symptoms rather meagre, and thus conclude that its reputation rests rather upon clinical than upon pathogenetic evidence. It produces, however, dilated pupils, confusion and dimness of vision, black and bright specks before the eyes, aching pain in and around the eyes, with general physical and nervous depression.

One member of this society, Dr. Copeland, of Ann Arbor, had the temerity to treat a case of chronic inflammatory glaucoma with the indicated remedy alone. The remedy was *Arsenicum* 3x, and the result was certainly very gratifying. I quote from the doctor's letter:

"The case was one of typical inflammatory glaucoma. Left eye was absolutely blind, and the right had retained simply the perception of light. For six months he had had almost constant pain. The pain was burning in character, the eyelids were œdematous, and there seemed to be a periodicity to the attacks of pain which came on about 10 o'clock every forenoon. The symptoms and the general appearance of the patient made me think of *Arsenicum.* It was prescribed in the 3x potency on March 29, and, beginning with April 15, it was continued in the 12x, two hours. After the first dose the pain disappeared and did not return until May 5th; tension was reduced to normal and vision of right eye was improved so that he could recognize large objects."

Note.—Since writing this paper I am informed by Dr. Copeland that Eserine was used locally before the patient came under his observation; was continued while taking Arsenicum. An iridectomy was made on the eye some time in April. After the slight relapse of May 5th the patient, who was under observation for two years or more, had no return of pain; tension remained normal, and the amount of vision obtained while under treatment was retained. Inasmuch as Eserine had been used previously without benefit, I think the relief of the pain may fairly be attributed to the remedy prescribed.

I doubt whether the same opportunity for experiment will ever occur again as was afforded Dr. Copeland. The patient was a convict, and

was pardoned on the condition that he would undergo treatment, and I doubt whether the doctor would allow even so brilliant an experience as the one narrated to justify him in often treating cases of glaucoma, especially in its early stages before the vision had become hopelessly deteriorated, with this or any other remedy without myotics.

In the symptomatology of *Arsenicum* the following symptoms, suggestive of glaucomatous condition, are recorded, viz.: Supra-orbital neuralgia, with burning and stitching pains; yellow, green and bluish vision, and white spots before the eyes; violent pains in the eyes; conjunctivitis.

In the Trans. of the American Institute for 1898 Dr. Delap, of Kansas City, refers to cures of glaucoma with Arsenicum and also with Bryonia and Rhus.

In the last case mentioned, that treated by Rhus, the patient had suffered almost continuous pain for twenty years and was blind. After the first dose the pain was relieved and it disappeared entirely in a week.

Rhus seems to have produced in the provings obscuration of vision like a veil, and aching and pressing pains from the eyes into the head, in addition to the well-known characteristic conjunctivitis and œdema of the lids.

In the Trans. of the N. Y. State Soc. for 1890 Dr. Parke Lewis mentions a case where *Osmium,* administered in doses of $^{1}/_{500}$ of a grain at frequent intervals, was followed by a good result without local treatment. An iridectomy had been done previously, but the tension remained high and the vision was not improved. Myotics had also been used without benefit and were discontinued when *Osmium* was prescribed. In its pathogenesis we find "rainbow vision" very marked, associated with severe supra-and infra-orbital neuralgia.

Phosphorus also has dimness of vision, with a halo around the light, and colored vision, especially red; flashes of light; attacks of vanishing of sight; all objects appear covered with a gray veil; momentary blindness; ciliary neuralgia; optic disc red and swollen, with indistinct margins; vitreous turbid. Its pathogenesis seems to point quite strongly to its application in glaucoma, and it is accredited with special usefulness in improving the vision after iridectomy.

Bryonia would be suggested by its well-known influence in arresting serous inflammations and by the soreness and stitching pains which it produces rather than by any marked influence upon the sight.

My own experience leads me to have confidence in the remedies men-

tioned, but I have never had the temerity to rely upon either of them unaided by local treatment, and I am of the opinion that to do so, except perhaps in rare and exceptional occasions, would be unjustifiable.

None of the cases referred to can with accuracy be said to be cured, since sight was not restored. The relief of pain was the marked result obtained; a very desirable one, but that did not constitute a cure of glaucoma.

The conclusion reached by my study, and in which I think I shall be supported by the large majority, if not by the entire membership, of this society, is that homœopathic remedies, especially Gelsemium, Phosphorus, Bryonia, Rhus, Arsenicum and Osmium, are undoubtedly of value in the treatment of glaucoma, especially for the relief of the subjective symptoms; that the general condition of the patient, and not only the symptoms directly relating to the eyes and the vision, in other words the totality of the symptoms, must be considered carefully in choosing the remedy, but that, as I stated in the beginning of this paper, our reliance should not be placed upon internal medication alone to the exclusion of myotics. More careful proving of our remedies, aided by modern methods of accurate diagnosis, at the hands of experienced specialists, would aid very materially in determining the sphere of action of drugs in the treatment of this affection and in placing their prescription upon a scientific and trustworthy basis. I anticipate that future study and experience will demonstrate more fully the nature and causes of the disease, and furnish additional evidence in support of its curability by homœopathic therapeutics. I wish that our remedies might be methodically tested in the manner I have suggested in connection with the local use of Eserine or Pilocarpine or Scopolamine, and compared with an equal number of cases treated by local measures alone. I believe the results would be most encouraging and gratifying.

DISCUSSION.

Dr. J. M. Patterson: This sensible and practical paper is endorsed by me, and I believe by every other member of this society. The opportunity for the treatment of such cases as the one reported by Dr. Copeland is so rare that it will, probably, be a long time before we shall be able to give reliable records of cases treated solely by the homœopathic or any other internal remedy. I confess that in my experience in the management of glaucoma I have never had sufficient confidence to treat them without the use of myotics, nor do I feel that we are justified in so doing. It is true, no doubt, that many of the symptoms of glaucoma can

be relieved by our remedies, but that a cure of glaucoma can be made by such measures alone is far from having been demonstrated. Dr. Linnell's paper so thoroughly presents my own views in this matter that further remarks would simply be a restating of his conclusions in a less forceful manner.

HOMŒOPATHIC THERAPEUTICS OF GLAUCOMA.

BY J. B. GREGG CUSTIS, M. D.,

Washington, D. C.

AT the command of your president, and in order to relieve myself from the prodding of our indefatigable secretary, I, though not in any sense a specialist as to the eye, consented to write upon the homœopathic therapeutics of glaucoma before I fully realized the barrenness of the subject as far as our therapeutic literature is concerned. Having accepted the task I will use the subject to illustrate a method of studying homœopathic therapeutics, hoping that the simple presentation in the form chosen will by suggestion call forth verifications of the remedies mentioned.

I preface what I have to say with the disavowal of any desire to throw discredit on the operation of iridectomy, as I believe that an unwillingness to resort to it would show narrowness, if not be criminal, excepting in the case of natural bleeders, where more time should be allowed for the action of remedies than under ordinary circumstances, and in cases where, because of shallowness of the anterior chamber, a satisfactory incision is especially difficult; inasmuch as you never perform iridectomy without giving a guarded prognosis, you, who have affiliated yourselves with the homœopathic school, are derelict if you do not take advantage of the remedies offered under the law which governs us. I would that I could impress upon each one of you who are called specialists, because of the surgical and mechanical requirements of the science of ophthalmology, the weight of responsibility which rests upon you by reason of your association with the School of Homœopathy, by virtue of your association you draw from the clientele of those who have acknowledged its superiority in the treatment of general disease. They call upon you because they know that it is possible for you to add to your special knowledge the advantages that come from a scientific system of therapeutics. If you fail to take advantage of what the homœopathic Materia Medica offers, your title to homœopathic specialists is forfeited and you become ordinary, plain, everyday eye doctors, who rely for success entirely upon knowledge

of the anatomy and physiology of the eye, plus the mechanical expedients that are taught by the science of optics.

First. All authorities agree that Eserine, by reason of its power to contract the sphincter of the pupil, causes thinness of the iris, and pulls upon its peripherel insertion, and so tends to keep open the canal of Schlemm and relieves pressure upon the filtration angle. Eserine is a remedy that is more thoroughly understood by the homœopathists than by the "regular" school. We know the power that it has over accommodation, how it affects every muscle in and about the eye, and its influence on vision. Its use for its mechanical effect is as imperative as is the use of Atropine in iritis. Whether, when applied locally, it exhausts its power on the eye, as Atropine seems to do, I am unprepared to say; but its effect is so marked that, if given internally, it might be expected to have a prophylactic influence and so prevent the development of glaucoma as a secondary disease where the history of the patient would suggest the possibility of its occurrence.

We will treat the disease after the manner of the text-books, naming remedies which suggest themselves as we go along, giving remedies which, from their symptomatology, would naturally be expected to be called for and be of assistance in the treatment of the disease. While mindful that all the symptoms that characterize the condition can be explained on the basis of intra-ocular pressure, we recognize that some peculiarity presents itself in each case which may be characteristic of certain remedies.

We find the greatest predisposition first in females, which is explained particularly by the vascular disturbances connected with the generative system, and it has been noticed that among those who reach the menopause early there is the greatest susceptibility.

These conditions lead us to the study of Cyclamen, Lachesis, Sulphur, Pulsatilla and Sepia.

We present *Cyclamen* because of the marked sympathy between the organs of the pelvic region and the eyes in a patient who needs the remedy, and more especially because of the increased danger of failure in the operation where there is a catarrhal complication with its accompanying sneezing and coughing. In the catarrhal cases where *Cyclamen* is called for eye symptoms are found. Sneezing is accompanied by blue vision, cough by pain in the eye, and both conditions are generally connected with symptoms referred to the generative organs. Hering, in his "Guiding Symptoms," will give you the indications for its use. I have verified the same many times. You will find that every

group under the rubric "generative organs" has symptoms of the head and eye, and nearly all of the eye symptoms are similar to those found in cases of glaucoma. Its action is more pronounced in these respects than Pulsatilla, with which you are all more or less familiar, but there is an absence of those stomach symptoms which are characteristic of Pulsatilla. Pulsatilla must not be forgotten, as it is one of the best remedies for the opening up of canals closed by catarrhal inflammation.

I refer to Sulphur, because of the often verified symptoms of the eye in connection with diseases of the generative organs, its pains, loss of vision and photophobia in connection with a menstrual molimen. There is frequently an interchange of symptoms between the ovaries and the left eye especially.

The next most common predisposing cause is old age, explained by an increasing tendency to vascular and other degenerative changes which advance of years brings, and which are more or less concerned in the causation of glaucoma. This tendency can be to a certain degree met by Baryta carb. or Phosphorus, as both have numerous eye symptoms, as well as a physiological foundation in the tissue changes which they produce.

We now pass to remote causes. Among the most common is rheumatism, or the rheumatic diatheses, which frequently indicates Bryonia; gout, which suggests Colchicum; the eye symptoms of which, if properly interpreted, show a glaucomatous condition as their cause.

Syphilis is an important factor in many cases, and frequently calls, as we all know, for Kali iod. and the Mercuries.

Iodine also shows action on the eye and its tunics, which warrant expectation of good results when indicated by its concomitant symptoms.

The most interesting part of glaucoma, because the most readily understood, is the change in the path of the intra-ocular fluid, which is always its immediate cause. This in itself suggests Bryonia or Pulsatilla when not accompanied by symptoms sharply indicating other remedies. All the symptoms of the disease presented are intelligible on the theory of pressure within the eye, causing either over-distension of the tunics, embarrassing the circulation or impairing its nutrition. Still, as we noted before, each case presents enough difference to give opportunity for the differentiation of remedies.

The simple symptom of tension suggests Bryonia. Farrington puts it well: "Bryonia is a valuable remedy in diseases of the eyes, not when the external coats of the eye are affected, however. It is to be thought

of for metastasis of rheumatism to the eyes. The pains are violent and shoot through the eyeball into the back of the head or eyes. There is also a sensation of tension, as if the eyeballs had been put on a stretch. Now you know from what I have said that Bryonia is indicated in inflammation of the serous membranes with effusion. Bryonia ought both symptomatically and pathologically to be a remedy in glaucoma. The tension of the eyeball is greatly increased. Hot tears flow from the eyes. Photophobia and diminution of vision are present."

I would add, do not forget Bryonia when glaucoma is a sequelæ of grippe or accompanied by rheumatism.

The next most common symptom is ciliary injection. The remedy that offers the most perfect picture when this is prominent is Rhus. See "Guiding Symptoms," page 47, Vol. 9. "Pain in r. eyeball, of such intensity that she could not bear even a slight touch; redness of sclerotic and development of numerous blood-vessels; dullness of cornea, great sensibility to light; iris of affected eye, which in its natural state was blue, is now green, pupillary margin not well defined, pupil itself does not move when exposed to light, lens appeared of a smoky dimness; as action of eye declined and vice versa; a burning, tearing pain in neighborhood of diseased eye, morning and night, depriving patient of rest and sleep." In cases where ciliary injection is early marked Rhus will be the remedy. It will relieve the pain or condition of the cornea. No doubt it has frequently aborted cases where glaucoma was not diagnosed.

Sulphur is also called for in scrofulous patients, or where there is a history of suppressed eruptions. Do not let your scientific tendencies blind you to the fact that suppressed eruptions do cause diseases, which become chronic and frequently result in organic changes.

The next symptom which most commonly presents itself is cloudiness of the cornea, which suggests Mercurius corrosivus and Argentum nitricum. The symptoms of Mercurius corrosivus are especially characteristic. It covers particularly the cornea symptoms, the pain, and too often the history.

Anæsthesia of the cornea is often noted, which I fail to find covered by any remedy excepting Plumbum, though there is some hint of the condition in Kali bich. In "Guiding Symptoms," page 478, Vol. VIII., I find the following: "Neuritis optici; papillæ swollen (examination after death showed interstitial hyperplasia of connective tissue; sheaths of optic nerves were distended by fluid; cerebro-spinal fluid was greatly increased; brain substance anæmic and the gray portion yellowish).

Left eye affected for two weeks; badly for five or six days; drooping upper lid; intense photophobia." This remedy is especially worthy of study when we think of its deep action, its tendency to cause œdema as the result of local inflammation, which is frequently followed by atrophy; it causes in addition to this an increase of fluid within the meninges of the cord and along the sheath of the nerves.

Theoretically, I find no remedy that offers more in treatment of glaucoma than Plumbum, and especially if it is secondary to lesion of the spinal cord, or in cases where there is a history of paraplegia or hemiplegia. This with Phosphorus give the two remedies that, from a physiological standpoint, offer the best results, and, as we progress in our provings, with the aid of the specialist, I have no doubt that all the prodromal symptoms will be discovered even in the small dosage which must of necessity be used, and if the specialists will examine carefully the eye of the lead poisoned or the match-making patients they will undoubtedly see where I find my reasons for recommending their use. The dilatation of the pupil varies so frequently that it cannot be relied upon by us excepting as a contra-indication against certain remedies, though when due to paralysis and atrophy of the sphincter more than to a greater or lesser amount of pressure presented Gelsemium suggests itself.

The loss of accommodation we cannot use as an indication, as it is characteristic of all cases. Neither can we look upon changes in the anterior chamber, nor to the differences of refraction for hints.

Excavation of the optic disc and the results following indicate Phosphorus first and then Plumbum, though other remedies may be called for by the peculiarity of accompanying symptoms, relief from which will often check the progress of the disease; but in the absence of characteristic indications the constant appearance of the excavation of the disc and subsequent atrophy are met so completely by one or the other of the remedies mentioned that I do not hesitate to recommend them.

A few remedies of our armamentarium have been presented, and upon further study I could, undoubtedly, add more based upon reflex symptoms, but with these presented we can expect results that have not been obtained by our friends, who refuse to consider remedies in the treatment of the disease. We have a right to expect good results from their use in the acute primary, or in the subacute variety, and after the iridectomy to stop the return of attacks in the chronic varieties. The

presence of absolute glaucoma would certainly indicate Plumbum, Baryta and Sulphur.

Before closing I want to note that I find already mentioned in literature at command the following, though I am sorry to say that I find but little in the way of verification:

Jahr. Phosphorus, which has been said to cure green cataract and claimed by him to help more frequently than any other remedy. Lachesis and Silicea are also recommended.

Peters gives Cocculus, Silicate of potash and Fluoric acid. Cocculus presents some symptoms which if connected with its characteristic stomach symptoms should lead to its study; its dilated pupils, with insensibility to light, haziness of vitreous and the blue border around the cornea, makes it promising.

Silicate of potash is purely empirical; it cannot be recommended.

Silicea might unquestionably be indicated in the chronic variety or to stop degeneration in cases of absolute glaucoma. The same might be said of Fluoric acid, which has a peculiar symptom of a cold wind blowing under the lids even in a warm room, which is so characteristic that it cannot be ignored in any case where that symptom is present.

I find three cases reported by Hoyne in his "Clinical Therapeutics" as having been cured by Argentum nitricum, to which we referred above.

Norton gives us Gels. without characteristic indications; though we find the provings, as laid down in Allen and Hering, replete with eye symptoms pointing to hyperæmia. We find the dilated pupils, the dimness of vision, confusion of sight, and also are aware of the important place it has in anæma, due to neuræsthenia, which so frequently accompanies an attack of glaucoma when indicated occipital headache is always present. He also mentions Aconite and Osmium, because of the halo of various colors around the light which is marked in its proving. Phosphorus, remember, also has this halo, and causes, as we know, fatty degeneration, which is a condition found in cases of glaucoma after the pressure from the confined fluids has existed for some time. He also refers to Belladonna, certainly in a very high potency, which a physician should use if it covers the totality of the symptoms better than any other known remedy. Asafœtida he recommends for the pains over the eye. Cedron for pains shooting along the course of the supraorbital nerve. Prunus for the crushing pain in the eye, as if it would be pressed asunder, and Spigelia for the sharp, stabbing pain through the eye and head. He also suggests Aurum, which, from its proven

influence on the nervous system, should not be neglected, especially when it has characteristic mental symptoms marking the drug.

Glaucoma hæmorrhagica makes us think of Phosphorus again and the snake poisons, especially Lachesis and Crotalus, though a more careful study of Ferrum and its salts bring to our attention the fact that this condition is generally accompanied by general anæmia rather than hyperæmia; that Ferrum or Ferrum phos. might relieve the condition.

As far as I in my study could go I find but few cases reported as cured by the remedies, but this I believe is due largely to modesty, as at least two or three cases have come under my personal observation. One of them was treated by Dr. Bushrod James by remedies alone. No doubt he can give us an account of it.

Thanking you for your kind attention, and again expressing the hope that continued study in the line suggested will bring about still greater results, I place the subject in your hands.

GLAUCOMA WITHOUT INCREASE OF TENSION.

BY JAS. A. CAMPBELL, M. D.,

St. Louis.

THAT "the essence of glaucome lies in the increase of intra-ocular tension, from which all other essential symptoms of the disease follow as a result," as affirmed by most authorities on the subject, from Von Graefe to the present time, will be generally accepted. Indeed, it would be difficult for us to disassociate from the name glaucoma the thought of increased ocular tension.

On the other hand, most of the classic writers on the topic call attention to the fact that, in exceptional cases, glaucoma may exist without increase of tension.

In Bull's Statistics (N. Y. Medical Journal, August, 1889) in 180 glaucomic eyes there were three cases with normal tension in both eyes, four cases with normal tension in right eye, and eight cases with normal tension in left eye. And Priestley Smith, while affirming that glaucoma is a complex process depending essentially on an increase of eye pressure, admits that it may exist, in exceptional cases, without any evidence of increased tension. He expressed the opinion that in such cases the increase of tension may be intermittent, or reduced after being present for a time.

Mauthner, in his Glaucomic Aphorisms (Archives O. VIII.—P. 25) calls attention to the fact that increased tension of the eyeball may show itself in every acute inflammation of the eye, no matter what its nature or what its cause. He points out that increase of pressure may be found in every keratitis, plastic iritis or even cyclitis; and says that iritis serosa begins, almost constantly, with an increase of tension, which may be long continuous, lasting at times for weeks or even months, without prejudice to the functions of the inner eye.

Again, while the glaucomatous cupping of the optic disc is accepted as a result of the increased tension, because of the pushing backward of the lamina cribrosa, the weakest part of the eye fundus, we are well aware that in the early stages of glaucoma this cupping of the disc may be entirely absent. On the other hand, a cupping of the optic disc, very closely resembling the glaucomic form, has been reported from time to time with no other evidences of glaucoma present.

And because of these anomalous and contradictory conditions, Mauthner suggests that it would be more scientific if we tried to distinguish by the term glaucoma, not a definite group of symptoms, but a definite process.

After some personal experiments and observations I have demonstrated, to my own satisfaction at least, that a slight variable tension may and does at times exist in otherwise perfectly normal eyes.

Thus having introduced my subject, I wish to give, in brief, two recent cases of glaucoma without increase of tension:

Case One.—A lady, forty-nine years of age, came to me complaining of pains in and around the eyes, and that her vision was more defective than formerly. She saw halo rings around the light at times. The anterior chamber was more shallow than normal and the pupils were a little dilated. The pains were in the eyes and down the side of the nose. The fundus veins were turgid, but there was no spontaneous arterial pulsation; this was easily produced, however, by slight pressure on the eyeball. There was no cupping of the optic discs, but they were red and congested, with a whitish peripheral ring encircling them. Her vision in the right eye was $^{15}/_{70}$, with $^{15}/_{40}$ in the left eye. She was hyperopic astigmatic. A proper correction with glasses gave her $^{15}/_{30}$ in right eye and $^{15}/_{15}$ + in the left.

In the beginning there was a slight increase of tension in the right eye, but none in the left.

In the right eye there were the typical glaucomic symptoms present, including increased tension. But the left eye had normal tension, although the characteristic pain, rain-bow halo, shallow anterior chamber and dilated pupil were present.

My diagnosis was glaucoma. She was given proper glass correction. A one-tenth per cent. solution of Eserine sulph. was used once daily, and *Gelsemium* was given internally.

I have now had the case under observation for one year, seeing her every few weeks. From time to time she has had some pain in and about the eyes, which is always relieved by the weak Eserine sulph. drops. The tension has been absolutely normal in both eyes for ten months. Her vision remains exactly as it was after the first correction.

Case Two.—A lady, fifty years old, had been under another oculist for some months. Had suffered much pain in and about the eyes and head. Her former attendant had diagnosed her trouble as glaucoma, and had insisted upon operating on the eyes.

I found V $^{15}/_{30}$ in both eyes. Tension normal. Anterior chamber narrow. Pupils partly dilated. No glaucomic cupping of discs, but veins full, red, with slight displacement of vessels at margins of discs.

She was in the midst of the menopause, and there was always an aggravation of eye irritation during menstrual excitement.

She was placed on Macrotin internally, and a one-twentieth per cent. solution Eserine sulph. was dropped in the eyes, once daily.

She has been under my observation now for over four months, and with the above treatment there has been a gradual improvement and general mitigation of all her bad eye and head symptoms. In fact, she has very little irritation left in the eyes, and the little she has comes on at rare and decreasing intervals.

I am sure that the above pictures justify the diagnosis as glaucoma without increase of tension. And tha non-recognition of the possibility of such an unusual condition migh lead to neglected opportunities and disastrous results.

In my own mind I accept the possible existence of glaucoma without increase of tension, and would explain the slightly dilated pupil, congested optic disc and fundus, as well as the local eye pains, in such cases, as the result of the involvement of only a certain number of the sympathetic nerve fibres supplying the eye. And this would be in perfect harmony with, and be explained by, the theory that glaucoma is a reflex neurosis through the sympathetic nerve system.

DISCUSSION.

Dr. J. N. Anderson: The discussion of this paper will properly be limited to the question as to whether true primary glaucoma is ever found without increase of tension. If scuh a condition does, or can prevail, then I humbly suggest that a new nomenclature be found to more truly represent the pathological state we have long known under the name of glaucoma. Increase of tension is the only unvarying symptom found in all the complex manifestations and etiology of the disease. Leaving out this predominating feature of the disease, it is impossible for me to comprehend the other manifestations of what we all understand as "glaucoma."

We may have one or more of the prominent symptoms of the disease accompanying other diseases of the eye, and yet not result in the more or less sudden loss of sight as the condition under discussion, unless there is interference with the filtration area, which is the essence of glaucoma. This interference of filtration, to my mind, must, in the nature of things, mean increase of tension.

The increase may be more or less intermittent in its manifestations, and the observer may see the case in the intervals when the tension is normal, and thus come to an erroneous conclusion. With our present methods of gauging the tension of the eye it is at times extremely difficult to say when the tension is normal, because the normal in one person, and, I believe, in the eyes of the same individual, may be abnormal in another person of a different age and constitution.

Conscious of the unreliability of our tactile sense, instruments have been invented for the purpose of greater exactness; but if we are to believe the testimony of one of the inventors in regard to his own instrument they are not reliable except to a limited extent. On this point Dr. Priestly Smith says: "For routine test the finger, or common test, is

the best at our disposal, for though the sense of touch may be highly educated, one cannot measure nor define what we feel." In favor of his own instrument, the tonometer, he claims that the differences of tension which are so slight as to elude the sense of touch may be due to differences of curvature, etc., in the membranes. Even this instrument, the tonometer, will not always suffice to determine the presence or absence of glaucoma, for the increase of tension is sometimes very slight and in many cases intermittent. The diagnosis must rest on a survey of all the symptoms. He further says that intra-ocular pressure fluctuates with the pulse and with the movements of respiration. It rises slightly during contraction of the external muscles of the eyes, and it varies with the force of the blood-stream and is under the influence of the fifth nerve. The variations have been established by experiment in the case of certain of the lower animals and doubtless occur also in the human eye.

In speaking of excavation of the optic disc in eyes of normal tension, Dr. Smith also says: "Some writers describe a form of glaucoma which is not dependent on increase of pressure in the eye; but this leads to confusion of ideas and terms. The excess of pressure which suffices to cup the disc is sometimes very slight and often intermittent; it happens therefore, that eyes suffering from true glaucoma present at certain times a strictly normal tension or an excess which is hardly discoverable On the other hand, there is reason to believe that an excavation closely resembling the glaucoma cup may arise through simple atrophy of the nerve in connection with a physiological excavation. Such a condition, when definitely diagnosed, should be excluded from the glaucoma group."

The two cases cited by the essayist are interesting, in that they presented the best conditions for a manifestation of glaucoma, both past middle life, the one with uncorrected hyperopic astigmia, the other in the disturbance of blood pressure attending the menopause. In his Case No. 2 he has not given the refractive condition, and in neither has he mentioned as to whether he found normal muscle-balance. This, I think, is to be regretted, for I believe with some authors writing on the subject that heterophoria is a predisposing if not an exciting cause of glaucoma and even cataract. It is quite easy for me to understand how these conditions might be incited by the undue pressure caused by a short eye-muscle in interfering with the normal nutrition of the lens or disturbing the filtration area under certain conditions.

The fact that both of the cases cited were relieved by the installation of Eserine, is it not in itself presumptive evidence at least that the condition relieved thereby was glaucoma in its premonitory stage, if not developed sufficiently to be recognized by so keen an observer as the essayist? The involvement of a few fibres of the sympathetic nerve as a causative factor in glaucoma, to my mind, does not explain the symptomatology found in this disease, even in its slightest manifestation.

REPORT OF OPERATIONS UPON TWO CASES OF SIMPLE GLAUCOMA.

BY C. J. SWAN, M. D.,

Chicago.

SIMPLE glaucoma, from both a therapeutic and a surgical standpoint, is a disease with an evil reputation. Therapeutic measures may delay somewhat the inevitable denouncement, but only for a time, and the reports of many of our most skillful surgeons are filled with gloom, predicting disaster for any one who attempts any sort of an operation upon a case of simple glaucoma.

During the past winter I have had two cases of this disease upon my hands, and have sought wisdom and inspiration, both by means of interviews with and a study of the writings of my confreres. One fact impressed itself upon me, and that is pure glaucoma simplex is really a rare disease; none of us have seen many of these cases and a good many more have never come in contact with it at all. Another thing which I noticed in my research was the wide difference of opinion as to what constituted simple glaucoma. In the minds of some quite well posted men the picture of the disease was so dim as to be scarcely recognizable.

The third mental note I took was of the difference of opinion among those who had had practical experience, as to the results of operation, except on one point, and that point was that it was impossible to promise anything from operation in this class of cases.

The first physician I interviewed was a man whom I consider one of the most skillful ophthalmic surgeons in the country. In reply to my questions as to whether he had ever had any cases of simple glaucoma, and whether he had ever operated any cases, he replied that he had operated two by iridectomy; that both went blind, hastened, he believed, by the operations. The next doctor had operated one case, the operation being immediately followed by an attack of acute glaucoma in both the operated eye and the unoperated eye, resulting promptly in absolute glaucoma or blindness. Several whom I interviewed in regard to their experience advised me earnestly to choose some oculist against whom I had a mortal grudge, and send all my cases of simple glau-

coma to him. All, however, did not agree in the absolutely unhopeful view. Doctor Oscar Dodd had had one successful case and Doctor Hotz two, I think he said. These gentlemen thought there was a possibility of success in operating, but agreed with all the rest that nothing could be promised.

In my observation of the two cases which have come to me this past winter, and as a result of my study of the literature, I have come to the conclusion that while the results of operation are decidedly problematical and that simple glaucoma deserves in no small degree the bad repute in which it stands today, at the same time I believe that a measurable proportion, I mean a proportion larger than occurs in other operations, of the losses charged to the inherent cursedness of the disease to be due to faulty technique and to faulty differential diagnosis.

We know that simple chronic glaucoma presents no active symptoms, and it is difficult to fix the date of onset.

We must learn to distinguish absolutely between simple chronic glaucoma and a diseased condition of the optic nerve with pre-existing physiological excavation, and the distinguishing sign is increase of tension; without this increased intra-ocular tension there is no glaucoma.

The symptoms of simple glaucoma, which are found in atrophy of the optic nerve, are impaired vision, narrowing of the field of vision and excavation of the optic nerve, along with sluggish and enlarged pupils.

Bull, of New York, to whom I am indebted for many good points upon this subject, given to me orally, as well as through an article recently published in the Medical News, thinks that this pseudo-glaucoma simulates the true glaucoma in about half the number of cases of so-called simple glaucoma. Of course, it is well-known that the physiological cup, the atrophic cup and the glaucomatous cup each have their distinct characteristics, but it is also true that when the physiological cup is very large and the nerve is atrophied it is often impossible to distinguish it from the cup of glaucoma. Hence, arose the controversy between those who believed all cases of simple chronic glaucoma to be simple atrophy of the optic nerve, accompanied by a large physiological cup, and those others who looked upon the condition as one of glaucoma. In a sense both were right and both were wrong, and the distinguishing symptom is the presence or absence of tension. Bull is the first of whom I have knowledge to lay stress upon this point.

If false glaucoma or optic atrophy and true glaucoma be confounded with each other we may be guilty of a double error, for the false

glaucoma should never be treated surgically, and, on the other hand, if the case be a true glaucoma we may deprive the patient of its real surgical remedy.

In simple glaucoma, as in the acute inflammatory variety, the increased tension is the dangerous factor, the symptom which must be removed in order to produce a cure.

Anterior or posterior sclerotomy and iridectomy are the operations which have been employed to this end. Today sclerotomy has been discarded as a means of permanent relief, and iridectomy has almost a monopoly as the surgical remedy for glaucoma.

Sclerotomy has been necessarily a failure, as it depends for its success upon making a permanent fistula through which the excess fluids of the eye may filtrate. This end is very rarely accomplished.

Iridectomy, when properly performed, re-establishes the filtration angle of the anterior chamber, opening the way for the aqueous to flow out through Fontana's spaces into Schlemm's canal. I believe the success of the operation, all else being favorable, depends largely upon the technique of the operation, and especially upon that part of it which has to do with the removal of the segment of iris.

In all cases of iridectomy for glaucoma the segment removed should amount to from $^1/_5$ to $\frac{1}{4}$ of the whole of the iris. The iris forceps should be introduced at one extremity of the wound, the iris raised at the point and snipped from the pupillary to the ciliary margin, the forceps still maintaining a grip on the severed end. The iris should be gently torn from its root until the opposing extremity of the wound is reached, when the detached piece is clearly severed from the remaining iris with a pair of iris scissors.

It is important that the iris should be removed at the very root, otherwise the remaining stump may still block the filtration angle and render the operation ineffective. By tearing it away from the root one insures that there will be no troublesome stump left, as the iris is thinnest and weakest at the very base and always tears at that point.

I operated both my cases under local anæsthesia, but noticed in both instances that the anæsthetic effect was not deep and that the iris was very sensitive. I have heard that Adrenalin will carry the Cocaine into the deeper tissues, but did not use it, as there still is some question as to its sterility.

The signs which I consider favorable for operation, and the absence of such signs or the presence of the opposite conditions which I consider, contra-indicate operation, are as follows:

1st. If the acuity of vision is not less than $^{20}/_{40}$ and the field is not contracted to a degree showing a field of vision smaller than a silver dollar on the ordinary perimeter chart, everything else being equal, I would consider the case not unfavorable for operation; the hopefulness of the case being greater, of course, in proportion as the fields of vision are better than the limit given above. A smaller field and a less degree of visual acuity I would consider very unfavorable.

2d. If the pupil responds to the action of a myotic, Eserine or Pilocarpine, and if the effect is not too transient—lasts more than a couple of hours—I would consider that a favorable sign. If the myotic also decreased the tension and increased the size of the visual field and the acuity of vision, I would think the case a very hopeful one, indeed.

The reverse of these conditions, a very low visual acuity with a much contracted field, a pupil entirely unresponsive to a myotic or only momentarily so, and no improvement in the field or acuity of vision from the effect of the myotic, would be a distinctly unfavorable sign. The all-important symptom of tension in these cases, so often very illusive, and I have found it sometimes necessary to examine a patient several times at different hours of the day in order to demonstrate it.

Bull quotes Sweigger as follows: "There are physiologically hard and physiologically soft eyes, so that he does not recognize any normal limit for the tactile hardness of the eyes, because the resistance to the finger depends not only upon the intra-ocular pressure, but also upon the resisting power of the sclerotic, which is different in different individuals and at different points.

"In simple chronic glaucoma the increase of tension is very apt to occur in a sudden attack, which at first lasts a brief period and then disappears, but as the disease becomes more chronic the increase of tension occurs more frequently and lasts longer, until in the pronounced cases it is a permanent feature."

There can be no question of doubt that the earlier the operation the more chances for long-lasting immunity or permanent cure, but when it comes to operating the sound eye before symptoms appear in that organ, upon the theory urged recently by DeSchweinitz, of the universality of the bilateral character of the disease, I feel that while theoretically, possibly, it might be an admirable measure, there are some practical arguments to urge against such early operations.

In the first place, while I am an earnest advocate of the operation and believe in its efficacy when skillfully performed upon well chosen cases, there are still too many learned opthalmologists who believe that the operation is more apt to hasten than to retard the disease.

Further, it is often many years after the onset in the first eye before symptoms are present in the remaining eye; again, if the operation is successful before symptoms appear it also ought to be successful in the same case after the first symptoms are able to be recognized. Also, and lastly, an operation necessitating the opening of the globe is always dangerous and the eye may be lost from accidents incident to the operation, accidents entirely independent of the diseased conditions.

So it seems to me to be unwise to operate a sound eye because its fellow has become glaucomatous, especially as I do not feel that the disease has been demonstrated to be without exception bilateral, and as I know of one case when eight years have passed since the onset in one eye without distinct symptoms occurring in the other.

In short, I do not think it wise to attempt a dangerous operation upon an eye which is and may continue to be sound for an indefinite period for the sake of possible prevention of a disease, which, at least, may have a slight chance of never occurring, and which if it does occur may be operated upon at the time of its occurrence with about as good a chance for success as earlier.

The argument for operation on the second eye before the onset of the disease is stronger for the acute form than for the simple chronic form.

Case One.—My first case was a clinical one; a strong, healthy mulatto woman of about fifty years of age, the mother of five living children, came to my clinic in Hahnemann Hospital, November 20, 1901. She had been blind in the left eye for five months and the sight of the right eye seemed also to be failing. She had never been ill in her life, and the physical and urinary examination gave negative results. There had been an attack of pain in the blind left eye which lasted a couple of days about one year earlier, after a doctor had put some drops in her eye (probably Atropine), since then she had no discomfort in either eye.

Examination of the eyes showed the physical condition of each to be about the same, with the exception that the fundus of the left eye was not so clearly defined as that of the right eye, on account of a slight cloudiness of the lens. There was bilateral glaucomatous cupping, bilateral tension, anterior chambers somewhat shallow. Pupil of left eye greatly enlarged and no reaction to light; right eye somewhat enlarged and sluggish.

Vision, left eye, not even light perception.

Vision, right eye, $^{20}/_{50}$.

Field somewhat concentrically narrowed, being most constricted on the nasal, but averaging about ten degrees less than normal on all sides.

An operation was consented to, which I performed the following week, November 27th. The patient was tractable and the operation, iridectomy, under cocaine anæsthesia, was without event, except that the

anterior chamber filled with blood. I felt exceeding hopeful of the outcome.

Thirty-six hours later the patient complained of some discomfort and I removed the bandage. The blood clot had moved to one side, disclosing the pupil; the scleral wound had closed, the iris and lens were pressed close up against the cornea, the eye was stony hard and the poor woman *thought* she could see a candle flame at one foot. I had an acute attack of glaucoma to handle and the unpleasant prospect of sending that woman back to her husband and her five children, blind.

The chances of doing anything helpful looked few and slender, and I knew that with such tension all hope must be gone in a very short time; so, after taking a little time for thought, I decided to do a posterior sclerotomy. I led the patient to the operating room and opened the globe with a Von Graefe knife about ten millimetres back of the cornea margin. Before withdrawing the knife I gave it a half turn and made pressure on the cornea, hoping to force the lens back in place. I repeated the operation three times before I felt that the tension was sufficiently reduced, and even then I believe the reduction of tension to have been to a greater degree due to the breaking open of the cornea-scleral wound than to the punctures of sclera. I then applied a very firm pressure bandage, which was changed twice a day. Eserine and Cocaine were instilled at the time the bandages were changed. The third day the anterior chamber was reformed and light projection was fair. From this time the improvement was steady and at the end of four weeks from the day of the first operation the patient was discharged with tension normal and vision $^{20}/_{30}$, field slightly constricted. I have seen this patient from time to time since she was discharged and vision, tension and all remain the same.

Case Two.—A gentleman, sixty-five years of age, came to me November 1, 1901. He had submitted two weeks before coming to me to a thorough physical examination by competent physicians and was pronounced sound in all respects. He complained to me that his eyes did not seem to work well, but he could not say exactly what the matter was, as his vision seemed to be good. Vision in the left eye was $^{20}/_{20}$ and $^{20}/_{20}$ in the right. The field in the right eye was narrowed concentrically about 30,—left field normal, tension normal in both eyes.

The fundus showed a deeply excavated disc in the right eye and one in the left not quite so deep. Media all clear, anterior chambers normal, pupil of the right eye slightly more enlarged than that of the left and not so active. The following day, early in the morning, I could plainly detect tension in both eyes, less in the left than in the right.

The field and vision were usually a little worse in the morning than in the afternoon. I made the diagnosis of glaucoma simplex and suggested to the family physician, who was a regular of some prominence in Chicago, that in a case of such gravity a consultation might be advisable. He agreed, and chose Dr. F. C. Hotz. Doctor Hotz concurred in my diagnosis and advised immediate operation, promising the patient nothing, not even sight surviving the operation.

I found that the field and the vision improved under Eserine, and, besides, I needed a little time in which to think the matter over, so I did not urge immediate operation. Making an iridectomy on an eye having vision of $^{20}/_{20}$ to $^{20}/_{30}$ after my last trying experience made me halt, especially as the patient was much opposed to the operation anyway. Five months later, May 1st, the eye having lost some ground in spite of the Eserine, I operated.

The operation moved smoothly until I began to snip the iris, when the patient made a frightful jump, tearing out a very large piece of iris. The anterior chamber instantly filled with blood and it was impossible to see what had happened. I trimmed off a piece that was still hanging from the wound, dressed the eye and left, feeling very anxious. The next day I again dressed the eye and on account of the blood could not see the iris. The third day the anterior chamber reformed, the clot having shrunk so that I could see that I had a large and symmetrical coloboma and all was well. The recovery was uneventful and vision which at first was $^{20}/_{200}$ is now $^{20}/_{40}$.

In the last case I used Eserine in both eyes before the operation and continuously in the sound eye after the operation. Tension is now greater in the sound eye than in the operated eye.

It is yet too early to feel at all sure that the glaucomatous process has been stopped, but I am exceedingly hopeful of the outcome in both these cases.

GENERAL DISCUSSION UPON GLAUCOMA.

T. M. Stewart, M. D.: In regard to this subject the investigations of a German scientist are worthy of attention. He made his investigations upon rabbit's eyes and has discovered a set of nerve fibers, distinct from the innervation of the intra-ocular vessels, the stimulation of which will produce a glaucomatous condition with increased tension. This looks as if it was a disease of the nervous system primarily. Dr. Blair's paper favoring the hyper-secretion theory is interesting, but this theory is not borne out by the pathological studies of Schnabel.

The cure of glaucoma in the sense that we understand it ought not to be looked upon as an impossibility, for as long as we do not know much about the glaucomatous process it would be well to be conservative in calling it incurable. New light may be thrown on the subject from the experiments above spoken of and which I believe are still being prosecuted. There has been at least one case of glaucoma with congenital absence of the iris, and that fact would rather tend to weaken the theory of those who claim the cause of glaucoma to be hypersecretion.

I would like to ask somebody who has been longer in practice than I have, for instance, I would like to ask Dr. Campbell, there, whether in the early days of his practice he saw more cases of glaucoma than now? I would also like to ask him whether he attributes any factor in glaucoma to the correction of errors of refraction? I have seen the statement somewhere that less glaucoma was seen nowadays than formerly, and

that the fact was to be attributed to the almost universal correction of errors of refraction.

It does seem to me that we shall have to take a new start with this disease; we have been threshing over old straw long enough. I believe that if we could call to our aid the physiological investigators of the day we would get new light. It is, or seems to be, a disease that is the result of several causative factors, and so far we have been unable to unearth them all. The physiological chemists can tell us better than anybody else the changes that morbid processes make in cells, the nature of faulty metabolism, tell us how the tissues resist assaults and how they succumb to assaults and present pathological changes, and it seems to me that men skilled in these things are the ones to help us in answering the hard problems of disease. All we have to do is to present the data to them. Last year during the meeting at Richfield Springs I was enjoying myself with a case of glaucoma. I inquired into the dietetic habits of the patient and found that she lived on cheese, meats and pastry and was fond of wine and beer. She had had glaucoma and had been operated upon and here was a new attack. Whence had it come? Would it have come again if the diet had been reformed and regulated? Nothing had ever been said about the diet.

This time there was to be no operation allowed. The patient had determined upon that. I was to stand back of the physician in the case. So I took her, knowing that there was to be no operation allowed. I changed her food, putting her upon a low diet, and used myotics. She had been in the habit of drinking but little water and indulging herself in wine and beer. I changed all that, and saw to it that her alimentary canal was unloaded. Whether it was the diet, the myotics or the laxatives I know not positively, but in four days the pain was much reduced. Gradually the congestion subsided and the hypodermic injection of Morphine, which had been resorted to, was discontinued and the eye cleared up, but there was no gain in the vision. It is my opinion that the diet had more to do with the improvement than any other factor in the case. It is only the physiologists who can tell us the dietetic needs of a given case. If the physiological state of nutrition in chronic glaucoma and chronic gout and of acute glaucoma and acute gout be compared, the resemblance would surprise you. I think that the day is coming when we will all be glad of the help of the physiological chemists.

G. W. McDowell, M. D.: How long do these cases of simple glaucoma run with myotics and internal remedies? And when you come to the end of the benefit to be derived from such treatment, what then, unless we operate? I have a case under observation that I have treated for two years. It was kept under control the first year by Eserine locally and Gelsemium and Kali phos. internally. After about a year the eye rebelled against the Eserine, which had been used in the strength of one to four hundred, and it was reduced to one to one thousand. It had to be used four times a week. The last gave as much reduction in tension as the stronger solution had. Later, when the eye became intolerant of the drug in any strength, I used Adrenalin immediately after to see if

I could control the irritation, but it failed to do so. Pilocarpine cleared it up in a week, and that has been used right along for four months. Vision is very variable; sometimes it will go as high as $^{20}/_{20}$ and then fall so low that the patient can scarcely see anything for a time. The good vision comes immediately after an instillation of the solution.

One symptom that she has had lately is loss of vision in the latter part of the afternoon and evening in the right eye. This has come on in the last two months, and I do not regard it as a good sign. Her sight suddenly becomes dim at 5 o'clock. I have never seen her at that time, but have had it described to me. It occurs with gastric disturbances, and consequently I put her on Lycopodium. There has been no positive result as yet.

But I started to ask the question, how long may we expect the local and internal remedies to hold such a case? I am coming to the end of my rope soon and I do not see much encouragement to operate.

C. J. Swan, M. D.: I would hardly presume to answer Dr. McDowell's question; but simply to add something in that line, I should say that when he has held such a condition in check for two years with Eserine and Pilocarpine he has done pretty well and should feel satisfied. Any time during the course of the treatment such an eye might suddenly and rapidly begin to deterioriate. I do not think a definite limit can be put upon the time that such a case may be held in check any more than there can upon cataract. So much depends upon circumstances that I do not believe that that is an answerable question.

Dr. Campbell and I clash a little in our papers. Perhaps it is a difference in terms rather than in facts. It is well to have a good definition of our subject in the start. I believe that recent writers agree with what I said in regard to the matter of tension. In simple glaucoma the increase of tension is very elusive and difficult to make out; it must be watched for and tested many times at different times of day. In my case I was never able to get increased tension in the afternoon; I could usually get it in the morning, but not always. I had the patient come in four times in a single day at different hours in order to take the tension. About 9 A. M. I detected it very clearly. Dr. Campbell quotes the opinion of Dr. Bull, of New York, as supporting his position in an article written in one of the journals. That article was written in 1882. Bull has written since, in 1891, taking an entirely opposite position, declaring that there is no such thing as glaucoma without increased tension.

In the second case mentioned by the doctor, the evidence does not seem conclusive. The doctor may have omitted some symptoms, but the only ones given are some pain, narrowed anterior chamber and dilated pupils. That is not a picture of glaucoma. It might belong to any one of several conditions, I may say of many conditions. The first case seems also to rest upon insufficient grounds. It was helped by Eserine, and that fact rather tends to prove that there was increased tension, for why or how could Eserine cause improvement unless it was by decreasing the tension? This would go to prove that one of Dr. Campbell's cases had tension, although the title of his paper is glaucoma without tension. I

think that after the doctor has studied over the matter a little he will agree with me that without tension there is no glaucoma.

J. A. Campbell, M. D.: Experience is a funny thing; as the old darkey said, that which he experiences when he is experiencing is his experience. We are too apt to draw a picture of a disease and then make every case conform to that picture or throw it out of the class if it does not do so. Nobody here ever saw two cases exactly alike; it is impossible to find two manifestations exactly alike. Dr. Bull may have changed his opinion; that is his privilege. Suppose he did do so, that does not change the facts of the matter. I simply quoted his opinion as he gave it once before. He must have had grounds for that opinion when he did form it. Suppose my cases did not agree to the regular rule. There are many things we see about our cases that help us to make a diagnosis that we do not put into words, and it was my opinion that these were cases of glaucoma, and I am the only one here who saw them. I distinctly stated in my paper that there had been increased tension in one eye at one time, but it was reduced.

The question of how long to keep up treatment in these cases can be answered only in a general way. Keep it up as long as there was any benefit, and when that ceased, stop the treatment. The theory that this disease could be due to reflexes through the sympathetic fibers has been doubted, but it seems entirely reasonable and probable. How is it that we blush in the middle of the cheek and not elsewhere? If such an efflux and pressure of blood may occur in the cheek and ear, why not in the eye?

I admire Dr. Swan's temerity in operating on his case. Because an eye has increased tension, and for no other reason apparently, for the vision was $^{15}/_{15}$, he operates. If I were the patient and failure had followed, he would have been open to a suit for malpractice. I cannot understand how he could bring himself to operate upon such slight grounds. The best operators lose eyes with these operations, even under favorable circumstances; there are two well-known men in my city who have ceased to operate in glaucoma at all. As far as the influence of Eserine goes, I endeavored to explain a couple of years ago that our employment of operative measures and local treatment is a betrayal of our absolute ignorance; if we knew more there is no question but what we would be more successful than we are and would use local applications little and operations less. We cannot foretell what the result of an operation will be. Its use is a manifestation of our ignorance. It should be always a last resort. The truth of the matter is that we are ignorant of the whole subject and should not be dogmatic nor positive in our assertions about it.

G. A. Shepard, M. D.: In some cases tension is certainly a variable factor. Only last week a case complaining of poor vision came to my clinic, which was passed by my assistant as of slight moment. After a careful examination I found on close questioning that she had had attacks of pain and redness at intervals before. The cupping of the disc was marked, but not typical. At the time of my examination there was

really no tension, but the history showed that there had been a number of attacks in which it was present. I have frequently seen cases in which there was no tension for weeks, and then suddenly the same cases would exhibit decided tension. Was it glaucoma at one time and not glaucoma at other? I do not think that they should be called "glaucoma without tension" just because there happens to be no tension at the time of examination.

E. J. George, M. D.: Three months ago I had a case that was of unusual interest; a lady having gone through considerable mental grief and trouble presented a typical case of glaucoma of the right eye, with pupil moderately dilated. I prescribed Eserine, and considering it due to a vaso-motor disturbance I decided to try Cimicifuga internally on account of it being a vaso-constrictor. I gave ten drops of the mother tincture four times a day, before meals and on retiring, when the stomach was empty. The tension soon diminished, the vision improved and the pain disappeared. So far the case seems to be doing nicely, but it is too early to speak positively as to a complete cure.

C. J. Swan, M. D.: Dr. Campbell and I have had some warm discussion. I think that he misunderstands the facts of my case when he asserts that the vision was so good. It was good, but in a very limited field. It was as I said $^{20}/_{20}$, but that was only central vision. It was narrowed to thirty degrees on one side and to forty degrees on the other. The field was smaller than a silver half dollar. Such a field of vision might be snuffed out in a night, and the patient get up in the morning absolutely blind. I am glad that Dr. Campbell acknowledged that one of his cases had tension, or might have had tension at one time; that is all that I am contending for. So I think that one of his cases might have been glaucoma.

W. W. Blair, M. D.: I have nothing especial to offer in closing the discussion. I came here to this meeting with the expectation of hearing glaucoma discussed from A to Z, and I believe that it has been.

Glaucoma without tension I have heard discussed on this side of the water and on the other side of the water, but I have never heard a solution of the problem so nearly approached as here today. Many times we hear men say that there might have been tension at some time or other, but they had not observed it. It is our duty to examine into this question, and we should take the pains to go out of our way, if necessary, to make examinations. I have such a doubtful case under observation at the present time. I admire Dr. Swan's pluck, or temerity, as Dr. Campbell calls it, and I wish I had enough of it to go ahead as he did and operate. When the small field is considered, he certainly was justified in doing as he did. Central acuity of vision is misleading when given without qualification.

J. A. Campbell, M. D.: I made the statement that my cases reported here never had increased tension. I will modify that so far as to state that they never had increased tension while they were under my observation. I chiefly wanted to bring before you the fact that there were cases that did not follow the general rule.

E. H. Linnell, M. D.: Undoubtedly glaucoma is a disease that has various origins, and frequently the eye trouble is simply the reflex expression of some other and possibly distant irritation. Those are the cases that our homœopathic remedies may help. I have had a case under observation for the last five years. This case is in my opinion a neurosis from irritation in the clio-spinal region of the cord. Pilocarpine clears up the attacks when they occur and they come less frequently than formerly. I have had other cases in which the exciting cause is a reflex from the nose. It may be due to uric acid in the blood. I wish that we might study this matter more carefully and compare results. Some cases might be treated with myotics alone, and then in connection with our remedies. In that way we might eventually get into a better knowledge of their usefulness.

J. B. S. King, M. D.: While listening to Dr. Custis's paper a curious idea came into my head. The remedies which he recommended most highly for glaucoma were Plumbum, Silica and Potassium silicate. Now there is a substance, very common, very insoluble, combined into a chemic unit, fused into an amorphous structureless mass, that contains just these elemental substances, lead, Silica and Potassium. It might be a good remedy for glaucoma; that it is insoluble is no argument against it, for Carbo vegetabilis is absolutely insoluble; that it is common is no argument against it, for Natrum muriaticum is a very common substance and yet efficacious. That substance is flint glass, which contains about 33% lead, the other 66% being composed of the Silicate of potassium. Such a glass I once had triturated up to the sixth decimal with the intention of making a proving of it, but I never did it. I will look it up again. I should like to have it tried in view of the group of remedies recommended by Dr. Custis in this connection.

T. M. Stewart, M. D.: I am sorry that Dr. Norton's paper was not read yesterday when there was a larger audience; it is too valuable to be lost among a few. Besides that there would be more discussion, and that is the most interesting and valuable part of our meetings. Powers has made the sweeping statement that no operation will do any good in chronic glaucoma, and Dr. Bull's experience seems to corroborate that view of it. In one hundred and fifty-seven operations on glaucomatous eyes only twenty-seven cases could be said to have had their vision preserved; the others lost vision until many of them went on to complete blindness. I do not think that there is a more interesting piece of literature in medicine than Javal's account of his own case. It is a very instructive lesson, in addition to its interest. Imagine for a moment that you were Dr. Javal, with what interest would you watch the gradual increase of the disease and with what eagerness would you watch the results of treatment? He first noticed a cloudiness in his vision while working to improve the ophthalmometer, the dimness increased and finally glaucoma developed. Operations were performed, but too late to get much benefit. It is one of the results of experience that operations are of the greatest benefit in the early stages. In Javal's case sclerotomies were done on the right eye at the first attack. Five months

later another operation was tried without avail. The sight of that eye was lost, and he acknowledged that it had been neglected at the first. Then the other eye developed the same trouble. He went to England to have the eye attended to, with the same result.

It does seem to me that the operations undertaken for the cure of glaucoma are empirical, rather than a scientific procedure. The good results are largely problematical or accidental. In closing, I want to set myself straight in regard to the dietetic question, for from remarks made to me after the session I think that I was misunderstood. I would not have the members think that the over-ridden hobby of uric acid was all that I had in mind when talking about diet. If it was said that I was speaking of the unoxidized proteid bodies belonging to the alloxur series I would be more disposed to accept that statement than the other. That is what I mean when I talk of a too nitrogenous diet. In Javal's case I believe that after the first attack his diet should have been regulated.

C. J. Swan, M. D.: I want to thank Dr. Stewart for his suggestions, which are good and useful, and to me at least new. In regard to the present status of the operation for glaucoma I noticed that Dr. Boice-Hayes says in her discussion that the pendulum is swinging away from operation. My observation and reading would not bear that out. There is some doubt about the advisability of operation in simple glaucoma, but Fuchs goes so far as to advise operation in every case. I do not go so far as that, but we all are influenced by such opinions. On the whole, I think that we are inclined to be very conservative. It requires fine judgment to decide when to operate and when to refrain from operating. Nobody should recommend too hasty operation; on the other hand, when necessary the earlier it is performed the better the chances of good result.

These cases do tend to grow gradually worse, although it may take years to reach the end. In one of my cases the central acuity of vision kept up all along, and yet I believe that atrophy of the iris was going on all the time. I really think that if I had operated on that case when I first saw it that its chances of success would have been better. I quoted Bull's last article yesterday, written in 1899, in which he was more in favor of operating than in a former article written in 1891. He did not give statistics. The title of the paper was "Operative and Non-Operative Simple Glaucoma." In early cases he was much in favor of operation, but he admitted that it was difficult to avoid mistakes in diagnosis.

C. L. Rumsey, M. D.: I can confirm Dr. Norton's recommendation of massage. I have been using it in glaucoma and find it most successful. I think that it is worthy of the special attention of the members of the society.

A. B. Norton, M. D.: I have nothing to add in closing, except that I had hoped to hear more discussion. I think that we all agree upon the necessity of operating in acute glaucoma, but we should differentiate very carefully between the acute and the simplex forms of the disease.

It is the simplex form that presents the problems that puzzle. Years ago I operated on all cases; some of them went rapidly on to blindness after operation. A rather large experience has led me to gravitate towards the non-operative treatment of glaucoma simplex. I believe today that a larger percentage of cases of glaucoma simplex can be cured, or at least stopped as to its progress, by homœopathic and local treatment than by operative measures.

DIAGNOSIS OF INTERNAL EAR DISEASE.

BY GEORGE W. MCDOWELL, A. M., M. D.

New York.

THE diagnosis of affections of the internal ear is rendered difficult and somewhat uncertain by the fact that a post-mortem examination of the parts involved is but rarely obtained in a case whose clinical features have been studied; while on the other hand, many changes have been found post-mortem in the labyrinth where the clinical history was unknown. From the many investigations made in this field, however, certain facts have been discovered, which, together with a process of exclusion, enables us to arrive at a diagnosis with a reasonable degree of certainty in the majority of cases.

In the consideration of a case of supposed internal ear disease the clinical history from the onset of the attack, the subjective and objective symptoms at the time of examination, as well as the results of the functional tests, must all be carefully weighed and their relative importance estimated.

Primary affections of the labyrinth are comparatively rare. They may arise from simple exposure to cold; from sudden or continuous exposure to an increased air pressure, as from explosions or from working in caissons; or as the result of long exposure to loud noises as found in boiler shops, etc. Primary disease of the labyrinth may also be caused by certain drugs, such as quinine, salicylic acid, morphia, chloroform and from lead poisoning. Secondary affections of the labyrinth may be caused by a long list of constitutional diseases, among which are measles, scarlet fever, diphtheria, influenza, meningitis, diseases of the kidney and from the extension of middle ear trouble.

To establish a diagnosis of disease of the labyrinth, affections of the external auditory canal, middle ear and Eustachian tube must first be excluded. If the otoscopic examination shows a practically normal drumhead, and catherterization reveals a patulous tube with little or no improvement in hearing power resulting, the probabilities are that if the deafness has occurred suddenly it is caused by some change in the labyrinth. If the history shows that the deafness has developed gradually, these same conditions may co-exist with an anchylosis of the foot-plate

of the stapes, as a result of a sclerosis which has not yet involved the nerve.

Having determined the amount of functional power both for the watch and voice, we begin the examination with the tuning forks, on which we at present place our main reliance. The principle upon which this practice rests is the observed fact that a vibrating fork held before a normal ear is heard longer than when placed on any part of the head, by preference over the mastoid process of the temporal bone. In other words, sounds are heard by a normal ear better by aerial conduction than by bone conduction. If, however, anything interferes with the normal conductivity of the external auditory canal or middle ear, whether it be a foreign body occluding the former, or a lack of responsiveness on the part of the membrana tympani and ossicles in the latter division as a result of pathological changes, aerial conduction becomes less and bone conduction becomes both relatively and absolutely greater than the former. This, however, is only true when the labyrinth is intact or nearly so.

As a general statement, we may say that in disease of the conducting apparatus of the ear, and in conditions producing more or less occlusion of the external auditory canal, the perception for the low toned forks is diminished, while a lowering of the upper tone limit is generally indicative of involvement of the labyrinth. To make an absolutely complete examination of the functional power of an ear it would be necessary to include the whole range of tones, which can be appreciated by the human ear from the lowest to the highest, as there might be zones of deafness, which would otherwise escape detection. For practical purposes a comparatively few forks with a Galton whistle for the tones above C_4 will be quite sufficient. For measuring the perception for the lowest tones the large Dench fork, which can be made to vibrate from 26 to 64 times per second, is most convenient. The other forks in general use are C, C_1, C_2, C_3 and C_4.

To determine the location of the lesion in any case of deafness Rinne's test is usually the first employed. In normal ears aerial conduction is better than bone conduction. When the conduction of sounds to the nerve is interfered with from affection of the canal or middle ear, then vibrations are perceived better by bone conduction than by the ordinary channel. If the conducting apparatus is intact, and the lesion is in the nerve, while the perception of sounds by aerial conduction is impaired, that by bone conduction will be reduced to a still greater degree or may be entirely absent. When both the labyrinth and the middle

ear are coincidently involved, either bone or aerial conduction may be the better, depending upon the degree of impairment of the nerve, the perception of sounds by both routes being below that found under normal conditions.

All of the forks used in making a functional examination of the ear should be first tested upon normal ears to ascertain the length of time they can be heard by aerial conduction, as the writer has found this to vary in forks of corresponding pitch by different makers and even by the same maker. Having determined the time of vibration for a normal ear, any deviation from this may be considered pathological to a greater or less degree depending upon the amount of variation. In this test, as in all of the tuning fork tests, the personal equation introduces an element of uncertainty which can be reduced to the minimum only by making repeated examinations.

In the Rinne experiment a vibrating fork, usually C_1, is placed on the mastoid of the ear under examination, and when it ceases to be heard is at once held before the external auditory canal of the patient and the duration of perception by aerial conduction noted. If the duration of bone conduction be found to be greater than that by aerial conduction the operation is reversed and the excess of bone conduction over aerial carefully timed. In connection with this test Dr. Bellows has introduced a modification which is now used in the examinations of those making drug provings under the auspices of this society. Dr. Bellows's method, which seems destined to prove valuable in making a comparison of different cases, is as follows: The C or C_1 fork is set in vibration and placed on the mastoid of a normal ear; when it ceases to be heard it is held before the external auditory canal of the examiner's ear, which is supposed to be normal, and the time the fork continues to vibrate carefully noted. A number of similar tests will give the average time which a given fork can be heard before a normal ear after it has ceased to be heard on a normal mastoid. This time expressed in seconds is used as the denominator of a fraction, the numerator of which is the number of seconds the fork can be heard by the examiner's ear after it has ceased to be heard over the mastoid of a defective ear. The numerator of this fraction will manifestly vary with the increased or diminished bone conduction present in any given case, and will enable another aurist on seeing this fractional expression to form some definite conception of the condition of the case of which he may be reading the clinical history.

In Weber's test the vibrating fork is placed on the vertex. If the

ears are normal the tone will be conducted through the bone to both ears equally well. If the disease exists in the labyrinth of one ear, or be more advanced in one than in the other, as usually happens, then the sound will be heard in the better ear. If on the other hand, the impaired hearing be due to obstruction in the sound conducting apparatus the sound will be heard best in the defective ear.

Schwabach's test consists in determining the time a fork is heard on the vertex as compared with the time it can be heard on the vertex by a normal ear. In disease of the sound conducting apparatus the time of perception will be increased, while in disease of the nerve this will be decreased.

Gelle's test is used for determining the mobility of the stapes and is of value in making a prognosis. It is based on the observation that when intra-labyrinthine pressure is increased momentarily the perceptive power of the nerve is diminished. Under normal conditions a vibrating fork in contact with the skull is heard less clearly if the intra-labyrinthine pressure is increased by compressing the air in the external auditory canal by means of a Politzer bag or any similar method. If the stapes be anchylosed no diminution of sound is noticed. If, however, the stapes be mobile and disease exist in the labyrinth there will be diminished perception with the increased pressure, and the patient will complain of tinnitus and giddiness, due to the irritability of the auditory nerve.

An enumeration of the subjective symptoms which would point to an involvement of the labyrinth has been purposely omitted from this paper, as they will be considered in detail by another writer on this subject. In considering the value of such symptoms, as deafness, dizziness, tinnitus, loss of equilibrium, vomiting, etc., it must be remembered that these may arise, not only from labyrinthine disturbance, but also from disease of the central nervous system on the one hand and from involvement of the middle ear on the other; and that as a consequence a positive diagnosis of disease of the internal ear cannot be established until the conditions of the middle ear and brain have been eliminated as possible causative factors.

DISCUSSION.

H. P. Bellows, M. D.: Dr. McDowell has left very little opportunity for anything to be said aside from words of commendation. The paper is concise and complete. There are three minor points that I wish to raise, however. One is in regard to that interesting condition where there are certain zones of deafness found to exist by making tests with

a series of forks, or by a musical instrument of large range. We find certain notes or series of notes that have dropped out. When this condition obtains it gives a reason for believing almost positively that there is an affection of the auditory nerve trunk, or, more probably still, of the auditory center or of the labyrinth itself. This is the ground that we should assume until something different is determined.

The second point is the method of measuring and recording the acuteness of hearing in making tests in the examination of our drug-provers. I find myself in a modest frame of mind, and I want to disclaim the use of my name as the inventor of any method. I think that this mode of testing and recording bone conduction has been used by others, although I can not say when or by whom.

The object of this method is to determine and record as nearly as possible the acuteness of hearing, not only by the ordinary air route, but also by the route of the bones of the head. This gives us two lines for comparison in making our examinations of the provers. Of course, the hearing by the air route should be the better of the two, but they hold a certain relative position in regard to each other, and the question to be determined is whether this relation is preserved, whether the deviations run in parallel lines in cases of affected hearing, or as the hearing is affected by the action of the drug. If, in general terms, the hearing is diminished by bone conduction in a greater degree than by air conduction, we are justified in saying that there is an affection of the nervous structure in the inner ear, while if the reverse is the case it is proper to say that the part affected is rather the more external mechanism. When the relationship is preserved and the effect upon the hearing by bone and by the air route runs in parallel lines we also have reason to refer the trouble to the inner ear. By these tests we hope to establish more accurately than ever before the part of the organ of hearing which is affected by the drug proved.

The same tests record an exaltation of the sense of hearing from hyperæsthesia and equally well indicate the part affected. For nstance, if the sense of hearing is exalted by both routes the drug is acting upon the nervous structure, but if the hearing by bone conduction is increased or remains the same, while the hearing by the ordinary route is diminished, then the drug is exerting its influence upon the middle ear and not upon the inner ear.

The third point that I want to bring up is relative to the Galton whistle. The main use of tuning forks is to determine whether the appreciation of the lower tone limit is raised or the higher tone limit is lowered. The highest tuning fork will fail to show satisfactorily an alteration in the upper tone limit, but the Galton whistle will show it with considerable accuracy. I lay great stress upon its use, both in my practice and in the proving, because it is by all odds the most satisfactory means of testing the perception of the highest tones. It should be noted, in this connection, that the great majority of whistles sold in the shops are quite worthless, owing to the predominance of a blowing sound over the pure wistle, so that the patients are misled and the

answers are not to be depended upon. It is only by searching the stock of the instrument makers and trying a great many whistles that one can be found which is reliable and satisfactory.

G. W. McDowell, M. D.: I mentioned the use of the Galton whistle in my paper as a means of determining the upper tone limits. Just before coming to this meeting a case was brought to my notice which is connected with the subject somewhat. It was the case of a man, absolutely stone deaf, whose history went back twenty-five years. He was then a student in college; one night after playing cards he went to bed feeling all right, but when he awakened in the morning and began to dress he felt as if he would pitch forward. This was followed by vertigo or a kind of circling in the head; he felt as if he was going around in a circle, and could scarcely walk at all without support, and only then like a drunken man. He recovered from this and went to a town some distance away to study law and then he noticed for the first time that the hearing in one ear was impaired. This was only about a week after the attack of vertigo. The next morning, after noticing that he was slightly deaf, there came a buttery discharge from the deaf ear. A week later there appeared a similar buttery discharge from the other ear; after which he quickly and completely lost his hearing and he has remained absolutely deaf ever since. The vertigo bothered him for eighteen months and then gradually grew better. It did not go entirely, however, and even now after twenty-five years he will feel it occasionally. He heard nothing neither by air nor by bone conduction. The only result of the tests that I made was that in the middle area an organ note was unpleasant, although he heard nothing, but was conscious of an unpleasant roaring like a cataract.

The drum membrane was only slightly retracted, but was in general of a ground glass appearance, showing that there had been middle ear trouble previous to the attack. It was one of those cases where we can give a very definite diagnosis and an absolute prognosis. I relate it because it was rather an interesting case on account of its history.

GARY'S OPHTHALMO-OSCILLATOR.

BY CHARLES LESLIE RUMSEY, A. M., M. D.,

Baltimore, Md.

AT the Washington meeting, two years ago, I read a paper on "Vibratory Massage in Diseases of the Eye by the Intermitting Vacuum Pulsator." At that time I spoke of the valued results of massaging the eye for chronic diseases and particularly for asthenopias. At this meeting I present "Gary's Ophthalmo-Oscillator, the Evolution of the Intermitting Vacuum Pulsator," by the same inventor, Dr. Gary, of Baltimore. The Gary Ophthalmo-Oscillator is a marked improvement on the Intermitting Vacuum Pulsator. It is more mechanically perfect and a neater machine. Its principal feature is a rotary valve, which breaks the vacuum. As the opening extends around half the circumference of the valve, there is no action on the return stroke at all, making a succession of intermitting vacuums without an alternate compression around the eye-ball. This would cause the eye-ball to return to its normal position by the elasticity of its own tissues and muscles. There is also the action of compression without an alternate rarefaction of air. Another advantage of this instrument is the thumb screw on the cam wheel to adjust length of piston stroke instead of a screw driver used for adjusting the pulsator. There is also a regulated scale on the latter instrument. The advantages of which I shall speak later. The adjustment of the various parts of the instrument is such as to work without the noise that was such an objection to its predecessor. Its action is regular, which is not so with the pulsator. This has caused me embarrassment in the latter instrument, by producing a too violent action on the eyes which, at times, are peculiarly susceptible.

I have been much interested in Dr. Gary's experiments on this subject, with whom I have had several conferences.

From time immemorial, massage at the seat of pain and disease has always been extensively patronized. The first practical massaging of the eye was performed by the so-called eye-cups attached to the intermitting vacuum pulsator. These eye-cups are made to fit over and around the eyes to receive the intermitting vacuums without an alter-

nate compression. The eye-ball is made to oscillate forward and backward, which movement is accomplished by the action of both instruments, which have been specially devised for this purpose. The forward movement of the eye-ball is produced by the vacuum and through the elasticity of the muscles and tissues the eye-ball resumed its original position.

The eye-ball rests in its socket on a cushion of fat and is freely movable. Its nerve supply enters through the sclerotic coat at its posterior portion. When the eye-ball oscillates forward and backwards, these nerves are alternately stretched and relaxed. This procedure acts as a powerful stimulant to light perception and increased nutrition. All this produces better tone to the blood-vessels. It furthers the removal of lymph from the parts and relieves the stasis of the blood-vessels, which is the cause of pain by the exudative producets into the tissues producing pressure on the nerve filaments. It thus furnishes a gentle vaso-motor stimulus, which quickens the blood circulation to carry off the *debris*. It acts as a direct tropic stimulus to muscular and sustentacular tissues and as a general stimulation of sensory nerves it may effect favorably the nutrition of the central nervous system.

In using this treatment for the eyes, attention should be carefully given to the duration and intensity of the massage. I never begin with a longer duration than one minute, to which I may add another minute according to the effects and the conditions for which I am treating the patient. There is a scale on the cam wheel to adjust the length of the piston rod, which regulates the intensity of the massage. That intensity is noted which leaves a fresh and invigorated feeling of the eyes. The general physiognomy, as a deep-seated eye, may cause a much longer stroke than another eye to secure the same intensity. I begin with the stroke that has the marking between No. "0" and No. "1", and apply the treatment for one minute, thus increasing the intensity and duration in accordance with the rules laid down. Generally speaking, I use the piston rod No. "1" and apply the treatment for three minutes.

The Ophthalmo-Oscillator can be utilized to produce alternate compressions on the eye-ball, the action of which is to press the eye-ball back into its socket, said pressure being released at the end of each piston stroke of the machine without a corresponding suction. It also produces a succession of intermitting vacuums without an alternate compression. The forward movement is produced by the vacuum and

the backward movement by the eye being drawn back to its original position through the elasticity of the muscles and tissues to which it is attached. The first action produces a sedative effect, the second causes a stimulating one. To secure the former effect, the instrument oscillates the eye-ball from four to five hundred times per minute, while the latter effect is best produced from two to three hundred times per minute. Avoid over-stimulation, as is shown by smarting and lachrymation. The eye-cup should be held lightly and air-tight to maintain the successive rarefactions or compressions. Too much firmness on the eye-cups can induce pain. Should the patient complain of pain when otherwise held, I find it more satisfactory to reverse the eye-cups than to readjust them. It has proved beneficial as an auxiliary treatment to cause a powerful vibration over the superior cervical ganglion by the plain circular cups on each side of the median line of the skull. The piston rod is adjusted to "4," and should be run six to eight hundred per minute.

The eye-cups five-eighths inch in diameter have proved efficacious for massaging over the external ocular muscles with the piston rod adjusted for massaging the eye-ball.

The massage of the eye exerts a special influence upon cases which seem to receive no particular benefit from the correct glasses prescribed, nor by any special treatment that has seemed indicated. It supplies that lacking of something which gives the eye a comfortable feeling. It increases the circulation, absorbs any foreign deposits, provides a healthy activity of the tissues and stimulates the peripheral ends of the nerves. It acts as a depletive, lessening the tension of the eye. In others as a stimulant, proving thus beneficial when nutrition and absorption are torpid. I have been more impressed with the relief given in muscular asthenopia, which heretofore had combated me, than any other class of cases.

While Gary's Ophthalmo-Oscillator supplies a long wanted instrument in my armamentarium, it is not by any means a panacea for all diseases of the eye. My experience, thus far, allows me to recommend the Gary's Ophthalmo-Oscillator for chronic glaucoma, optic atrophy and muscular asthenopia.

Case One.—Mr. W. O., aet. 44, consulted me May 12, 1901, with paroxysms of pain in the left eye-ball, of which he had complained at intervals for three years. The right eye-ball had given patient less severe pain on two occasions. The tension of both eye-balls, particularly the left one, was markedly increased. Ophthalmoscopic examination revealed chronic glaucoma with some atrophy of the left optic nerve.

The field of vision of the left eye was contracted about half the normal radius, particularly the nasal side. Central vision on left eye $= {}^{20}/_{70}$, in right eye $= {}^{20}/_{40}$. I used alternate compressions of the eye-ball daily for two weeks, thereafter twice weekly for two weeks. The patient has had one attack since this treatment in one year's interval, which was relieved on four treatments. W. O. reports satisfactory use of both eyes, which he failed to have previous to this treatment. W. O. had had predicted for him blindness by the several specialists whom he consulted. He had also various prescriptions for glasses, none of which were more than one-half dioptre in difference. I selected one of these glasses, which were in accord with my examination for refraction.

Case Two.—Mrs. W. E. W., aet. 40, consulted me on February 5, 1902. Central vision, O D = could detect hand immediately in front of eye; O S $= {}^{20}/_{40}$. Diagnosis—total atrophy of the right optic nerve; some atrophy of the left optic nerve. This patient has also been treated by other oculists to have the conviction "I am doomed to blindness." Mrs. W. received two weeks' daily treatment, when she returned home to find the "dreadful misery" had entirely disappeared and could use them one hour with comfort. The retinal vessels of the left eye-ball have greatly improved in calibre. Central vision is more distinct though it rmains ${}^{20}/_{40}$. The field of vision is about normal, which previous to the treatment had been slightly contracted, particularly the nasal side. I noted no change in the right eye-ball. Patient had treatment every month for about one week. Astigmatic glass was prescribed for the left eye at the first consultation.

Case Three.—Miss C. B., aet. 35, consulted me August 5, 1898. Adduction, 3 degrees; abduction, 8 degrees; exophoria, R = 9 degrees P = 16 degrees; minus glasses improved the exophoria 2 degrees. I advanced the internal rectus muscle of both eyes to secure orthophoria with minus glasses. Patient still had discomfort with eyes, particularly on using them. As I had exhausted my resources I advised Miss C. B. to consult another oculist. Patient returned to me November 14, 1901, with the same discomfort, having seen three oculists. I applied the massage to the eyes to find entire relief after four treatments.

PNEUMATIC AND OSCILLATORY MASSAGE OF THE VISUAL AND VOCAL ORGANS.

BY WILLIAM R. KING, M. D.,

Washington, D. C.

MUCH has been written during the past few years relating to various forms of massage of the membrana tympani in affections of the organs of hearing, but thus far I have failed to note much matter in our literature pertaining to massage of the eye or the throat.

For about two years I have been using this means, at least as an adjuvant, in treating various conditions affecting the eye and its functions, as well as the throat, particularly that part of the latter pertaining to vocalization. On various occasions in the past, it has been my privilege to address this society and the American Institute of Homœopathy on the general subject of aural massage. With other members I found our late lamented honorary member, Prof. Houghton, of New York, greatly interested in this subject, and I secured quite early the pneumatic masseur for the existence of which he was responsible, viz., the so-called Wappler Pneumophore (see cut). This, as you know, is the electric motor equipped with a "three way pump," viz., a pump which will produce blowing, suction and an alternate blowing and suction, dependent on position of valve plate. On the opposite end of the shaft of this motor can be adjusted a surgical drill and latterly a new massage appliance, termed an Oscillating Masseur.

A few months after placing this apparatus in my office I was requested by Dr. Gary, of Baltimore, to visit his office and inspect a machine adapted for massage of, not only the ear, but the eye, and other portions of the anatomy. I later on availed myself of this invitation, and found the Gary machine to be, at that time, a somewhat crude masseur like the Houghton apparatus; that is, its main feature was a "three way pump," as I have already described. The mechanism was somewhat different and the machine was more cheaply constructed, but it was practically designed to do the same work. Dr. Gary placed little stress upon its value as an aid to hearing at that time, but spoke particularly of its efficacy in many of the intra-ocular diseases, citing

considerable success in cases of incipient cataract, effusions in the retina and choroid, as well as the vitreous, incipient optic nerve atrophy, and more superficially he declared that its application had a most salutary effect upon cases of corneal opacity, especially the more superficial varieties.

Feeling that I possessed a basic apparatus as good or better than his machine, I proceeded to have appliances constructed with which to use it upon the eye. I had constructed glass eye-cups of various sizes and designs, and began to treat various intra-ocular lesions by this method; with what success may be seen, in part at least, by the recount at least of several cases later on in this paper.

While treating some cases of intra-ocular disease in this way the thought occurred to me that as manual massage had proven of undoubted value in the treatment of various forms of muscular relaxation and collapse occurring either from strain, improper use or non-use, that this method of applying massage might have a practical value in the treatment of relaxed or inadequate extra-ocular muscles, as well as for treating those muscles concerned in adducting and making tense the vocal cords during the production of vocal sounds.

Following out this thought I had small glass cups made suitable for application over any of the tendons near their ocular attachments; also, larger ones to cover the area on either side of a larynx. Just here a brief description of the terminal appliances for utilizing properly this pneumatic force may not be out of place.

From the upper nipple on the valve plate of the pump extends a section of rubber tubing at the distal end of which is attached the selected apparatus. If treating both eyes it may be done simultaneously by utilizing a bifurcated metal or hard rubber attachment with two sections of tubing therefrom, at the end of each of which is applied the selected instrument.

In treating the extra-ocular muscles I utilize a glass cup with a diameter of from five-eighths to a half inch. This is applied directly over the muscle to be treated and the pneumatic massage thus applied. This same appliance I use for a general massage of the cornea and also in incipient cataract, as well as in other intra-ocular abnormalities.

Following the use of this smaller instrument, which, by the way, I usually utilize with the alternating movement of the masseur, I proceed in all intra-ocular disorders with a larger glass cup shaped to accurately fit over the eye-ball in front of the orbit. This has a long diameter of about one and a half inches, and a short diameter of about

one and an eighth inches, and is shaped like the old styled eye-cup. The various cups will vary from three-eighths of an inch to one and three-quarter inches in diameter. The larger cups are usually utilized in applying the pneumatic massage to the external larynx, utilizing as a rule the bifurcated tubing and two cups, one on either side, simultaneously. In this treatment I ordinarily apply the alternating pneumatic force, which produces a slight spanking or slapping effect over the parts.

In treating the membrana tympani and middle ear I utilize only the alternating and the suction force. In treating the eye I use the blowing or puffing and the alternating force, and in treating the vocal organ I use the alternating alone so far as the pneumatic force is concerned.

Latterly, I have been using over the larynx an oscillator made for me by the Wappler Company. This is attached to the other end of the motor shaft from the pump by means of a flexible arm similar to that of the surgical drill. Near the end is a hollow metal ball in which revolves a weight on an arm. The speed and force are capable of much modification, and it is applicable to the most delicate structures. The extreme end is supplied with a round metal plate, which is the part to be applied during the treatment. I am at present having made some devices of my own to apply on the distal end to better enable me to use this oscillatory force on the eye and ear. In cases of muscular insufficiency, either too slight in degree to make an operation advisable, or in those cases where, though advisable, the operation is refused, I have found in this method of treatment a decided assistance. The patients almost invariably express a feeling of great relief and of restfulness after the treatment, which continues for quite a while until continued accommodation and concentration again becomes necessary. In these cases I apply the pneumatic massage (alternating) over the tendon to be treated, and vary the length of sitting from three to fifteen minutes, depending on the case.

In cases of corneal opacity, incipient cataract and of general intra-ocular lesions I begin with the small cups (from three-eighths to one-half inch in diameter), applying on the front of the eye-ball over the corneal region and through the closed eyelids; this is continued from two to five minutes, and immediately followed by a similar application with the large oblong eye-cups, modifying the force by means of an ingenious valve at the head of the cylinder of the pump. Lastly, with the same large cups, I apply for a few minutes straight pressure on the eye-ball with the cylinder valve closed. In progressive myopia, especial-

ly in young subjects, I am sure I obtain a good restraining effect by means of frequent treatments with the pressure power of the pump.

In corneal opacities and effusions in the anterior chamber I invariably utilize the alternating force alone, or in connection with the galvanic current of electricity.

Many of the members present are aware that I have more than once in the past extolled the action of certain homœopathic remedies in these cases of true incipient cataract. I have nothing now to take away from what I have claimed, but with this newer method I am convinced that in many cases I am able to enhance the action of my remedies by means of the stimulation of the general ocular circulation, as well as by the nerve stimulus produced in the organ.

Perhaps the most unique and interesting experiments with this apparatus have been made upon the vocal organ; especially has it been utilized in cases of vocalists, public speakers and actors who have been called upon for much sustained effort of the vocal organ, and who, in many instances, I am sure, have been using these organs improperly. In these cases we find a relaxation and atony of the adductor and tensor muscles of the vocal cords, viz., the lateral crico-arytenoids, the arytenoids and the thyro-arytenoids. As may be imagined, there exist varying causes for this condition, but the results are the same, viz., that the voice is more or less seriously affected. In vocalists usually the lower and upper register are first and most seriously involved because of lack of power in adducting and in making tense the vocal cords. With the laryngoscope this condition may be demonstrated and the cords are seen to be insufficiently approximated, and they are also seen to be flabby and lack tone; they will be dull and lustreless, somewhat kind or even reddened instead of possessing the normal pearly gray appearance. They will be dry owing to the constant blowing of the air over them which escapes between the insufficiently closed cords while singing.

This is surely a picture of muscular insufficiency and one that proves exceedingly serious when occurring in an individual who is a professional singer or speaker.

Together with suitable local treatment to the impaired and involved mucous membrane, and the use of the indicated homœopathic remedy, I have in these cases latterly employed external massage over the region of the adductor and tensor muscles with considerable satisfactory result.

In this connection I will cite a case or two which will demonstrate

the efficacy of this method of treatment to at least boost and brace up cases of functional relaxation:

Case One.—Miss E. W., in September, 1900, was referred to me by her vocal teacher owing to a practical loss of voice; her upper and lower register were then useless and what tones she had were tremulous. An examination revealed the following condition: Mucous membrane of glottis and larynx dry, congested and of a dull lustre. In making vocal tones the cords were visibly insufficiently approximated, were flabby and lacked tone. The tonsils were considerably hypertrophied, and the inferior turbinate bodies were likewise enlarged. She had possessed a fine voice and was in training for a stage career. This seemed to be "nipped in the bud" at the time she was referred to me; however, we began a system of tonic and massage treatment with some local care of the mucous membranes involved. She was given local treatment three times a week, consisting of first alkaline, followed by astringent sprays with inhalations of a vapor of glycerole of guaiacum. Then a current of Faradic electricity was passed across the larynx outside. This was followed by pneumo-massage, utilizing the larger glass cups over the larynx on either side with the alternating force of the machine. This was applied for from five to fifteen minutes at a sitting.

She began to improve very early and had reasonably soon recovered control of her principal tone. I was, however, convinced that the main cause for the break down resided in the resistance to voice expulsion consequent on the hypertrophied tonsils and turbinate bodies, especially perhaps the latter, as her head tones had been the ones most involved.

Assuring her that her trouble would doubtless soon return after ceasing treatment, I advised reduction of these hypertrophies. This was acceded to and they were both reduced entirely by means of the galvano-cautery.

The improvement has continued and she has been actively engaged in professional operatic work since December, 1901, and is now singing acceptably in a highly successful production at one of the Broadway theatres in New York City.

Of course the toning of the vocal organ accomplished by means of the electricity and massage would not have proven permanent without the removal of the cause in this case; still it shows that much can be accomplished primarily in these cases, and where the relaxation is due alone to strain or over-use this method, with rest and future care, will doubtless do much to restore the voice to its pristine vigor and fineness.

Case Two.—Mr. W. H. D., a baritone singer of much promise, was referred to me because a number of his tones, especially in his upper register, or just where he left the chest for the head register, would constantly break. He had been classed as a tenor by a former teacher,

and his upper register had been much strained by improper placing of his tones.. I found the cords relaxed and flabby and showing generally the appearance already referred to. He was immediately treated locally and constitutionally for some catarrhal conditions presenting, and was placed on the pneumo-massage treatment, with steady and constant improvement, until at present he has little to complain of and his vocal teacher is quite satisfied with his progress. He is at present undergoing a little electro-cautery treatment for some turbinal hypertrophies, and latterly I have substituted the newer oscillatory massage on the larynx, which I think has stimulated him to more rapid improvement.

With regard to the use of this treatment on the eye I will cite, briefly, a few clinical cases. First, as applied to the extra-ocular muscle and later to intra-ocular lesions..

As to the efficacy in muscular insufficiency, or heterophoria, I might cite a number of cases treated successfully during the past two years, but as time will not suffice I will select what I consider to be one of the most severe and characteristic cases.

Case One.—Mr. H. C. S. reported to me in September, 1901, suffering from headaches, many nervous and mental symptoms and considerable general inco-ordination. Lenses for astigmatism were readjusted with some relief, but most of the mental and nervous symptoms continued. Esophoria varied from 14° to 20°. Partial tenotomy of the internal recti was done with but slight relief, as esophoria, ranging from 2° to 5°, remained, together with many of his nervous symptoms. Pending a possible resort to advancement of the external recti he was put upon a course of pneumo-massage, with interrupted galvanic electricity applied over the tendons of the external recti muscles. This has been continued since December last, and today his esophoria was nil and he could abduct 4°. All diplopia has disappeared, many of his mental and nervous symptoms are things of the past, and his encouragement is gratifying.

Case Two.—Mrs. E. W., aged 51 years, consulted me first in January, 1901; had been for quite a time under treatment by one of the best equipped colleagues of the other school. Discouraged, she applied to me for help. The left eye was practically blind, vision only consisting of ability to see large objects in a contracted field on the temporal side. Vision at this time in R. eye was only $^{7}/_{200}$ without lenses. She was placed upon Strichninum phos. 3 internally, and given local applications of the constant galvanic current, followed by pnuemo-massage, using first the small cups with alternating force, followed by large eyecups first with modified alternating force, followed again by the blowing force full strength and with rapid strokes of the pump.

This treatment had no effect upon the left or nearly blind eye, which in a few months became totally blind. In the right eye, however, it was followed by steady and marked improvement, so that she has been en-

couraged to continue under treatment ever since. Vision in this eye has improved until in March her vision was $^{15}/_{100}$, and the optic disk has improved in appearance, losing much of its former pallor and the vessels taking on a more normal appearance. About the middle of April last the condition became suddenly aggravated, and vision soon dropped to $^{12}/_{200}$. No reason could be assigned for the changed conditions, and the treatment is still being continued, with occasional blisters of canthos plasters over the temple and instillations of ¼ of 1% solution of eserine with some beginning improvement again. This case I fear will lose all vision in time, but I am convinced that active treatment along the lines suggested, if begun earlier in the diseases, might have proved permanently successful. As it is I am convinced that the disease was retarded in its progress, and I trust it may be still further restrained.

It was while treating this and several other much less advanced cases that I heard of the successful treatment, by Dr. Gary, of Baltimore, of Senator Money, of Mississippi, for optic nerve atrophy by means of pneumo-massage. The Senator had been given an absolutely hopeless prognosis by celebrated opthalmologists, both in this country and abroad, and I am creditably informed is improving steadily under this treatment. I know he visits Baltimore three times weekly to take the treatment, and that he is greatly encouraged by the steady improvement of his vision.

Case Three.—Mrs. M. F. C., aged 35. History of high degree of myopia since a child—right eye blind for six years owing to an extensive retinal detachment. Left eye became suddenly blurred in November last while straining at stool. Large yellow spot appeared before the eye, producing an irregular scotoma. The opthalmoscope revealed a comparatively small detachment below and to temporal side of the macular region. Rest for a few days in a dark room with cool compresses was resorted to, then the careful application of pneumo-massage was utilized. The modified alternating force, followed by light blowing force, was used, with the result that in a few weeks the effusion beneath the retina had been absorbed and vision was back to the normal degree.

Cases might be multiplied, many successful to a greater or less degree, and some quite unsuccessful, did time permit, but for the present those herewith submitted must suffice, and I only trust that I may be able at some future time to give fuller data along this line, and that it may prove, what it now seems to me, a boon of much usefulness.

I trust that other of our members may see fit to experiment along these lines, and to later on submit the results, be they good or bad, that our beloved science may be either enriched in a priceless way, or

that another apparent aid in our work may be promptly proven useless. I am not content as yet to give up other means that I know are good, but so far have utilized this method simply as an assistant or adjuvant and in a purely experimental way, and my only excuse for offering a paper on this subject for this body is that I am greatly encouraged by two years' work and experiment along this line.

DISCUSSION.

Dr. Bushrod W. James: We all know the disposition to adhesions and contractions of tissue after inflammatory processes in different parts of the body and eye and orbitral region are not exempt from this process of interstitial deposit and contraction, especially when the conjunctiva has been hyperæmic or inflamed.

The breaking up of these adhesions and the extension of the parts, especially the terminal or peripheric nerves, we all know receive benefit by their extension and the liberation of the adhesions, hence the process which Dr. Rumsey suggests of ocular oscillation is certainly a very interesting, valuable one to us as oculists.

I remarked that I had taken a deep interest in Dr. Rumsey's paper and his description of the use of this new treatment, for I had myself for many years massaged the eyelids for paralysis by my own fingers, and the globe also in some other nervous conditions, but had always feared to use it in Glaucoma or in ulcerated cornea in certain cases, as De Schweinitz recommends.

Gary's Ophthalmic Oscillator, of which Dr. Rumsey speaks, I had not seen until I reached the meeting, but his description of it in his paper rather pleased me, and the object it has in view, having been so successfully employed in a number of cases by his own use of it. A personal examination of the apparatus itself enables me to say that it certainly is a great improvement over other instruments which I have seen and which are used for this purpose.

The oscillator reduces the pulsations upon and extensions of the globe and its nerves and tissues to an accuracy not heretofore obtained, and in the rotary valve which breaks the vacuum the great improvement exists, the opening extending only half way around. This causes a series of quick interruptions of the vacuum, there being no compression around the eye-ball, as he says there is no action on the return stroke. The elasticity of the structures of the eye and the surrounding tissues enables the eye to return to its usual position.

This form of massage or oscillation of the eye extends and contracts the muscles and the subjacent structures, as well as the optic nerve itself and the sensitive ciliary nerves, which is a great advantage to many cases of muscular asthenopia or nerve strain that we are daily meeting in our ophthalmic work.

These movements increase the circulation through the muscle and other parts of the eye, so that they are better nourished and the peri-

pheral and vaso-motor nerves are put into greater activity and an increased nutrition and vigor is gained in this manner, while an extension of the vessels and muscles improves their activity and usefulness.

I like the regular systematic action of Dr. Gary's instrument, as it cannot well produce too great an extension or action.

Dr. Rumsey cautions those who use the instrument not to give it too intensely or for too long a time. He uses it for a minute and later on adds another minute.

The degree of intensity which causes the eye to feel better is the one adopted.

He calls attention to the fact that the extensions and retractions of the eye being oscillated cause the nerves and blood-vessels and muscles to be alternately stretched and relaxed, thereby relieving the stasis of blood, as well as aiding in the breaking up of abnormal adhesions and products of exudation which so frequently produce a neuralgic intense pain by pressure upon and probable retraction of the peripheral nerve filaments.

The first effect is a sedative one and the next effect is that of stimulation. The two cases he gives certainly had satisfactory results in its use.

De Schweinitz, in his recent hand-book of ophthalmic practice, recommends for the treatment of corneal ulceration massage of the cornea.

The massage movement should be made in a circular and radial manner over the cornea through the closed lids after the introduction of a small piece of the yellow oxide of mercury salve into the conjunctival cul-de-sac. Some irritation accompanies the method, but may be allowed by the occasional use of a collyrium of boric acid and cocaine.

Yellow oxide of mercury, together with massage of the cornea or the local use of a solution of Iodide of potassium, is also beneficial.

Massage of the eye-ball has been recommended by several authors and is said to have been followed by improvements in vision and deepening of the anterior chamber.

In embolism of the central artery of the retina, vigorous kneading or masage of the eye-ball has been recommnded, and in some cases has been followed by good results.

Gifford recommends inhalations of Nitrite of amyl in connection with the massage.

Thos. M. Stewart, M. D.: The discussion of this paper divides itself into two general heads. First, the discussion of the subject matter of the paper; the various methods of treatment employed, and particularly the method of massage, as described by the writer (Dr. King) of the paper. The second head would be the discussion of the general topics brought to notice through the reading of the paper.

First, then, the discussion of the paper should be pursued in the light of the last two paragraphs, wherein the author states that the method of massage he advocates might be illustrated at greater length than he felt the liberty to take, by relating histories of cases, "many successful to a greater or less degree, and some quite unsuccessful." That is ex-

actly what we want, those "cases, many successful to a greater degree or less." The motive of the author in presenting the paper is here also disclosed, a matter it is well to keep in mind in criticising the text. The author hopes that others may take up the same line of work, report results, good or bad, that the method he describes may be proven of value or useless. The author feels prompted to state that two years of work and experiment have greatly encouraged him to continue this line of treatment.

It is evident, therefore, that the range and therapeutic value of pneumatic and oscillatory massage of the visual and vocal organs has not been determined to extents the author desired.

Also, it is evident that we are compelled to look for methods of treatment that will give us more brilliant results in stages prior to operation in cataract; in muscular eye defects when accompanied by persistent eye discomforts; in intra-ocular affections and certain vocal derangements.

The paper does not go into detail as to results on all of these points, and time must be given for the acquirement of accurate and detailed data upon each topic.

Perhaps the best way to secure the desired information would be for each operator to confine his investigations of the range and application of this form of massage to but one of the diseased conditions, until its exact therapeutic value in that disease is determined.

Regarding the major portion of the paper, describing as it does the equipment and technique, we can add nothing.

We very much doubt that at present the vacuum cups can be applied with that exact nicety necessary to influence the intrinsic muscles of the larynx, and from reading the paper only we should judge that the area involved in laryngeal treatments would influence the deeper structures secondarily.

Rhythmic massage of the ocular muscles by this method may surpass dextrous traction on the muscles by forceps, but results of the latter method encourage its use, and that is all that the author at the present time claims for his instrument for massage, viz., "encouraged to continue its use."

It seems to the discussant that the method offers some aid in the management of the results of intra-ocular disturbances, and it is to be regretted that the case of the eminent member of the U. S. Senate was reported as cured by this method of massage, whereas the author of the paper gives us to understand that the case was under treatment until recently, to say the least.

The cases reported in the paper are interesting, but they do not demonstrate clearly the value of pneumo-massage as applied by the author.

In vocal cases, equally brilliant results have been obtained by other methods in cases quite as annoying as those reported, and we, too, are speaking of professional voice users.

"What are these other methods, you ask?"

First. They are methods directed to correcting improper methods of vocalization.

Second. The results were prompt, and no other treatment was given.

These points are mentioned not to detract from the author's method, but to emphasize the fact that other methods are of at least equal value. Proper vocalization is a potent remedy not only to cure, but to prevent the ailments common to the voice user.

In muscular eye defects stereoscopic training by some such apparatus as Kroll's, combined with prismatic exercise, first correcting the refraction and having patient wear the prism they can fuse, base-in in exophoria, base-out in esophoria, and gradually increasing the prism strength until latent muscular trouble ceases to disclose itself, or until muscular balance is established, or all troublesome symptoms have been overcome, will accomplish all that pneuno-massage has done, as reported by the paper now under discussion.

Again, we wish to be understood that the full value of massage as described in the paper is not yet determined, and the trend of this opening discussion is to show by the contrast of methods that the field thus opened by Dr. King is deserving of further investigation to the end, as he aptly states, that "others may submit results, be they good or bad, that our beloved science may be either enriched in a priceless way, or that another apparent aid in our work may be promptly proven useless."

David W. Wells, M. D.: I was much interested in the paper and instrument. I would like to ask about the case related by Dr. Rumsey, where the adduction was three degrees before the treatment and there remained some asthenopia afterwards, whether one can be certain that improvement is really due to this particular procedure or to the other measures employed. Also, I want to ask if the application is made directly to the muscles or with something intervening, such as the rubber dam?

T. M. Stewart, M. D.: I have a question. What about the motive power? I do not know how the speed or number of vibrations can be regulated with any precision if the hand is used as the motive power.

G. W. McDowell, M. D.: Has it been actually demonstrated that the eye moves outward during suction? I doubt whether it does so. It is probably an inference from the sensation. We all know in removing the eye that the optic nerve is a tough and resistant structure, and I should judge that the improvement that results from the use of the oscillator comes from the improvement of the circulation in the tissues of the orbit rather than from any actual outward movement of the eye ball itself. Why is it that in some cases of optic atrophy Dr. Gary uses suction and in some cases pressure? Suction where there is a lack of blood supply appeals to me as rational enough, but not the other. I cannot see either why suction or compression alone is better than alternate suction and compression.

D. W. Wells, M. D.: One statement made by Dr. King in his paper regarding the treatment of the eye by this method is very suggestive

to me that we should be on our guard in accepting the statements of our patients as pure truth. The Senator spoken of has "felt great improvement in the sense of sight," but were tests made to verify that improvement? I had one case of partial atrophy of both optic nerves with vitreous fluid and flocculi present. He was under Dr. Gary's treatment for months and returned to me to show me the improvement. The patient was much encouraged and thought that he had improved greatly, using his fingers as a test of his vision. The tests that I made, however, showed no gain whatever. The point is that we must get objective tests of improvement before we note it as a fact. The subjective are of little value.

F. D. Lewis, M. D.: I have two questions in my mind on Dr. King's paper. Has this treatment been tried to any extent and with what results in advanced cataract, and is suction not better in high degrees of hypermetropia than pressure?

E. H. Linnell, M. D.: In heterophoria, are the cups applied to the open eye or through the lids? In a case of detached retina, what would be the treatment, suction or pressure, or the two alternated?

C. L. Rumsey, M. D.: I shall try to answer all questions. The instrument is on the table for your inspection and further inquiry. It is run by hand power or motor. As I have not yet used the Wappler machine I can give you only my experience with the Ophthalmo-Oscillator. I do not claim the eye-ball moves in the orbit, as could be confirmed by the experiences in cutting the optic nerve on enucleation of the eye-ball. There is an ocsillation of the eye-ball of which a patient is himself cognizant. I instruct my patient to keep his eyes open as best he can unless the patient is nervous.

As to the question about the young woman who failed to receive relief from any treatment until she tried the "Oscillator." I believe the treatment added tone to the muscles, improved the circulation and lymphatic flow, all of which brought relief. I have often had immediate relief from "sore spots" on the head and face by using the circular cups, as I show you, over the affected region.

W. R. King, M. D.: Not much, if any, effect upon advanced cataract. I have used it in incipient cataract in one eye with advanced cataract in the other eye, using the treatment upon both eyes. The patients wanted it done, but I cannot say that I have seen any result in cataractous conditions, where the disease is advanced enough to cut off the vision materially. I do not believe that it can produce any elongation of the eye-ball or any coming forward of the entire eye. I believe, however, that we may flatten the eye because it rests upon a solid cushion in the orbit and can be flattened by pressure. It gives you much the same results as by using the Paris instrument demonstrated by Dr. Woodward, of Washington, at Richfield Springs last year, applied with a harness about the head. He has had some excellent results for the time being, but I do not know that they were permanent, as, in my opinion, the ball of the eye would tend to return to its original shape, the tissues being very elastic. It might be permanent in the

eye of a growing person. In the case of a girl of ten years of age with progressive myopia, where I used lenses that did not correct the whole defect, I think that with these treatments, although irregularly given, the myopia has been retarded. The girl continued her school work.

I always use the application through the closed lids. It might be used to the open eye, but I have not thought it necessary. I generally use alternate pressure and suction with small cups, followed by straight pressure. I am afraid to use much straight suction on the eye. My attention was first attracted to the Senator's case by a despatch in the paper. I made inquiries among his friends. They told me that he was positively improved and that he was anxious to continue the treatment. In his case the prognosis was absolutely bad. He took the treatment, like a drowning man grasping at a straw. The report is that it is helping him.

Our patients do imagine a whole lot of improvement that we cannot put down in figures. I have a case of optic nerve atrophy, one eye already gone and the other going. I feel that I have checked matters; there has been no progression in six weeks. He had been steadily losing ground before that time. In some other cases the ability to read test-types has improved, in other tests also the near and far points have increased. I often use the treatments after tiring the eyes by gymnastics. The muscles are tired and the patients feel done up. Before they leave I give them a local massage with the alternate pressure and suction vibration over the muscles that have been exercised. They experience an immense amount of comfort from it. I have cured one case of detached retina to the extent of complete absorption of the effusion, using the kind of vibration I have described before. The case was of about twelve hours standing. She had lost the sight of one eye four years before from detached retina. At that time she was away and I sent to her the name of our representative in the town she then was in. I forget what the name was, but she had some misunderstanding with him and I recommended her to Dr. Vilas or Dr. Buffum, of Chicago. She finally fell into Dr. Buffum's hands. She made some temporary improvement at first, but it did not last long, and she eventually lost the sight of that eye. The eye that was left was highly myopic with characteristic spots from an old choroiditis, a defective eye in every sense of the word. While in the act of straining a large white opague spot came before her eye, and as soon as possible she applied to me, arriving about twelve hours later. I put her in the dark and used cool compression, and as soon as she was able made application of the oscillator with small cups and very gentle alternation. The symptoms gradually subsided and the sight is now as good as it was before the accident. It is a case of congenitally weak eyes; her father's eyes were quite defective and he became blind at about the age that this accident occurred in the daughter. I have had her under observation for about twelve years.

THE DECIMAL NOTATION FOR VISUAL ACUITY.

BY HAROLD WILSON, M. D.,

Detroit, Mich.

MORE than fifteen years ago the writer urged the adoption of the decimal notation of visual acuity.* Since that time progress in this direction has been slow, and the vulgar fraction is still the rule. Decimalism has, however, gradually been gaining friends. I desire again briefly to discuss the question.

In Norris and Oliver's System of Diseases of the Eye, Vol. II., p. 15, Herman Snellen discusses the question of reducing the fraction ^{d} to a decimal, and enumerates the following objections which we may consider *seriatim:*

1. *"It does not indicate at what distance and with what letters the test has been made."* This must be admitted; but even the unreduced fraction $\frac{d}{D}$ gives information only as to the distance and not with what letters the test has been made. Moreover unless otherwise specified, the distance *d* is generally understood to be twenty feet or six meters, and would therefore be implied in such an expression as $V = 0.5$. If any other distance were used we might say, for example, "At 15 ft. $V = 0.8$." Furthermore, a knowledge of the distance *d* is of very much less importance than of the illumination used, and as to this factor, the fraction $\frac{d}{D}$, whether reduced or unreduced, gives no hint.

2. *"As a rule the result of testing is limited to approximate values, in consequence of the necessity of obtaining round numbers."*

Now are not all common records of visual acuity approximate? If a patient is recorded as having $V = {}^{20}/_{40}$ may it not be true that ${}^{20}/_{41}$ or ${}^{20}/_{42}$ or some other approximating value represents the visual acuity more accurately? It is not probable that a patient with gradual loss of vision, say, from optic nerve atrophy, suffers that loss by discontinuous drops from one line of the test-card to the next. The ordinary test-card contains only seven or eight lines of type, and therefore measures only seven or eight degrees of visual acuity, *d* being fixed, whereas the decimal card contains ten lines and measures ten degrees of acuity

*On a Needed Reform in Visual Records, *Amer. Jour. of Oph.*, December, 1887. Reform in the Measuring and Recording of Vision, *Trans. Amer. Inst. of Homœop.*, 1888, p. 532.

under the same conditions, giving thus a nearer approximation than the common system.

3. *"It requires a definitely fixed distance and therefore does not allow the interpolation of intermediate values by altering the distance d at which the test-card can be seen."*

For an acuity equal to or greater than $V = 0.1 = {}^{20}/_{200}$, both systems use a fixed distance in practice; for lesser grades of acuity, just as we may record $V = {}^{4}/_{200}$, ${}^{6}/_{200}$, ${}^{10}/_{200}$, etc., so we may equally well write V = 0.02, 0.03, 0.05, etc., or for closer approximations V = 0.0225 for V = 4½-200. The writer confesses his inability to see why an approximation to the value of the acuity may not generally be made with the same, if not with greater ease, by the employment of decimals, than by the use of the present system.

4. *"The arithmetical series 0.1, 0.2, 0.3, etc., tend to produce a wrong impression of the proportional values of the visual acuity which are indicated by the test. The intervals are too great for the larger visual angles and too small for the higher degrees of visual acuity."*

That is a patient having V = 0.5 has not really lost 50 per cent. of vision. But it is fair to ask what understanding we are to have as to the amount of loss suffered by a patient if we express his vision as ${}^{20}/_{40}$. The writer finds it impossible to get any more substantial information on this point from one record than from the other. If we say that a patient recognizes at a maximum distance of twenty feet letters which ought to be seen at forty feet, what then? What is the amount of loss? Both expressions practically indicate the same fact and are understood to refer to only one aspect or property of the visual sense. There are certain forms of retinal disease in which there is a very serious loss of visual power, and yet in which under certain conditions of illumination we may find $V = {}^{20}/_{20} = 1$. If we were to measure in every patient not only the visual acuity but the light sense, the chromatic sense, the visual and motor fields and the binocular sense, in short, all of the various properties of the visual functions, we might arrive at some expression adequate to form a basis for comparative estimations of the visual power. But everybody understands that visual acuity is only a single and variable function. Yet by equalizing the conditions under which the tests are made, the records of acuity are practically of great service for the comparison of different eyes or of the same eye at different times. It does not seem as if the mere adoption of the decimal notation should introduce any confusion, since the conventionality is generally understood. Any expression for the visual power as a whole

would be a complex one into which the notation for acuity would enter as only one of the variables, as in the formula of Magnus for "the ocular earning ability."*

If the ordinary arithmetical sequence 0.1, 0.2, 0.3, etc., does not fairly represent the differences in visual acuity, and a geometrical progression should be taken as a basis for the construction of the test-type, it is not because the notation is decimal. The series $^1/_{10}$, $^1/_8$, $^1/_6$, $^1/_5$, $^1/_4$, $^1/_3$, etc., is no more geometrical than is the series 0.1, 0.125, 0.16, 0.2, 0.25, 0.3, etc. In other words, the use of a decimal series does not of necessity involve any sacrifice of proportional values. If we wish to preserve these values we have simply to choose an appropriate series, decimal or otherwise.

Now on the other hand, passing to the question as to how far the adoption of the decimal notation for visual acuity may be of advantage, the following points may be noted:

1. It would lead to a desirable uniformity of nomenclature. At the present time we may find visual acuity expresed in a great variety of ways, *e. g.*, $V = \frac{20}{40} = \frac{20}{XL} = \frac{6}{12} = \frac{6}{XII} = \frac{12}{20} = \frac{5}{10} = \frac{1}{2} = 0.5$. This diversity of expression leads to a certain confusion in the effort to appreciate and compare different clinical histories or the general discussion of refractive anomalies.

2. Decimals are in general more easily written and more readily compared than vulgar fractions, and contribute to a more simple as well as a more uniform nomenclature.

3. Calculations involving the visual acuity as a mathematical quantity—such as those in visual economics—are very much simplified by the decimal notation.

If no more serious objections can be urged against the decimal notation than those of Snellen above noted, it would seem as if the advantages offered by such a system were considerable enough to warrant its general adoption. The writer has used the decimal notation in all his case-records for more than fifteen years, and has found it entirely satisfactory. If all refraction examinations with the test-cards were made with a bright artificial light, as the writer long ago suggested, the variations in acuity due to variations in illumination would be reduced to a minimum, in accordance with Fechner's law, and this plan taken in connection with the decimal notation would introduce harmony, uniformity and simplicity where heretofore there has been discord, variety and complexity.

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*Magnus and Wurdeman, Visual Economics, 1902, p. 5.

THE RELATION OF SOME OCULAR DISEASES TO PATHOLOGICAL CONDITIONS IN THE NARES.

BY A. WORRALL PALMER, M. D.,

New York.

ALTHOUGH this is by no means a new subject of consideration, still as little regarding it is found in our own literature or society transactions of late, it may be interesting to review in a terse manner what we already know or is understood on this not unimportant subject, and add a few clinical cases.

The allotted time for these papers will only allow of a condensed resume of the subject; but, having become much interested therein, I hope to give at some time in the near future a more thorough paper on this intermediate field of our two specialities. The diseases under consideration are mostly functional.

The manner in which these nasal conditions affect the eye is fivefold.

1st. By continuity of tissue along the lachrymal canal.

2d. Obstruction of the canal interfering with proper drainage of the eyes.

3d. The carrying of bacteria from the nose to the eye.

4th. By the intimate relation of the blood supply of the ocular tissues with that of the nasal and its accessory or communicating cavities.

5th. By the intimate relation of the nervous supply of these organs.

From personal experience and that of others we find that the following diseases of the eye may be dependent in a more or less degree upon diseased conditions in the nose:

Dacryocystitis has been caused by ethmoiditis; (b) retro-bulbar neuritis and hæmorrhage, by nasal and naso-pharyngeal disease; (c) persistent injection of the conjunctival blood-vessels, enlargement of the muscular branches of the blood-vessels and passive œdema of the retro-tarsal fold, as well as retraction of the upper lid, improper innervation of the sympathetic and intractable neuralgia have all been found to be dependent upon suppuration in the region of the infundibulum and hiatus; (d) scrofulous ophthalmia, so-called, in some cases was caused by excoriating anterior rhinitis; (e) epiphora, asthenopia, inability to near vision, nictitatio, neuralgia, inflammation of the lids, skin

and conjunctiva frequently depend upon inflammation within or thickening of the tissues within the lachrymal canal, causing obstruction thereof; (f) acute or chronic conjunctivitis is sometimes cured by the relief of a rhinitis or pharyngitis; chronic conjunctivitis may be caused by deflection of the septum, hypertrophy of the inferior turbinated, "cold in the head," or hay fever; (g) finally from reflex origin, by irritation in the "reflex area" (a la J. N. Mackenzie) we may encounter the following: Muscular asthenopia chiefly of the ciliary and external rectus, photophobia, retinal hyperæsthesia, muscæ volitantes, persistent and nagging neuralgia, and contraction of the visual field especially for colors.

Now we will refer to the more practical portion of our subject.

Case One.—Is an exemplification of either reflex nervous irritation or bacterial infection from putrefaction of retained nasal discharges in the inferior meatus.

This case which was especially interesting to me came to the late Metropolitan Post-Graduate Clinic, records of all the clinics of which were unfortunately cremated for certain reasons. Therefore, can only give an outline from memory.

In 1894, a boy, age eleven years, had been treated in Dr. Deady's eye clinic for repeated attacks of phlyctenular conjunctivitis, occurring about every two months, for two years or over, confined almost entirely to the left eye. Then he was sent to my clinic for treatment of a naso-pharyngeal catarrh. At the same time another attack of his conjunctivitis was coming on apace with the acute exacerbation of his naso-pharyngeal difficulty.

Examination showed the usual appearance of a hypertrophic catarrh of these cavities. Also a fairly marked ridge on the left side of the septum extending about half way back; in the middle of this was a sharp point pressing into the soft erectile or cavernous tissue of the anterior end of the inferior turbinated.

The ridge and spur were removed and the customary local and internal treatment administered with great improvement, if not cure, of the nasal condition; and further, only one more attack of conjunctivitis, although I kept track of the boy for a year and a quarter.

Case Two.—Fibro-sarcoma of the sphenoid sinus. C. H. Le S., age 46 years. Carpenter. Came upon recommendation of Dr. Strong to my clinic.

July 25, 1901. Family and previous history. Father died at the age of 62 years, exact cause unknown, but patient's description did not point to malignant condition. Mother living and healthy at 76 years of age. Seven brothers and sisters living with good health. Five died of ordinary children's diseases. A sister at six years of age died of what the patient called "rickets," never having walked. The patient had had no serious illness.

About Christmas, 1900, a hacking cough commenced. January 1,

1901, a severe otalgia dextra set in, on account of which he had all his upper teeth extracted upon advice of physician. Four days later an O. M. S. A. set in, which took the usual course, but the pain continued notwithstanding the cessation of the O. M. S. A. and the extraction of the teeth. About this time the nose became obstructed. Soon after the pain extended to the left ear.

May 5th he applied to the N. Y. Eye and Ear Infirmary, where the case was diagnosed as one of phthisis without cough, probably meaning tuberculosis of the pharynx.

Potassium iodide in large doses was prescribed, and continued until July 4th; this disagreed with his stomach, and from this time he gradually lost flesh.

May 3d, ocular examination by Dr. Strong was—

O. D. $^{20}/_{40}$ — 1 D. c. X 90° = $^{20}/_{15}$
O. S. $^{20}/_{40}$—.75 D. c. X 90° = $^{20}/_{15}$
Add on plus 1 D. s. for N. V.

On July 1st, vision of left eye was totally gone.

Status Presens.—July 25th, examination showed a man of tall, stooped, gaunt, exhausted appearance, skin white and drawn, nervous and irritable. The eyes were staring, totally blind in left, and could only distinguish objects such as a person, could not recognzie them, with the right. In left eye a marked strabismus convergens.

He complained of a lump in the throat, with occasional very severe pain in the throat, extending to the ears and vertex.

Nose was entirely obstructed, all the endo-rhinal tissue was much injected, thickened, soggy and bled easily.

Naso-pharynx is two-thirds filled with a smooth tumor springing from the vault.

Because of the disease first affecting the throat and subequently the ear, eye and nose in succession, the only apparent location that could cause all these was the sphenoid; a provisional diagnosis of tumor within this sinus and probably of cancerous nature was given.

A piece the size of a pea was removed with adenoid forceps for microscopical examination; it cut like a piece of grizzle, and was accompanied by profuse hæmorrhage for such a small incision.

Dr. Neilson, the pathologist of the hospital, made a diagnosis of fibro-carcoma, with which the symptoms closely agreed.

August 22d, the ocular condition noted in Dr. Helfrich's book was congestion of both fundi, excavation of the right disc; vision right is nil; left $^{20}/_{70}$.

September 28th, vision of left eye diminished to $^{4}/_{200}$, pupillary reflex good, stronger reflex action on nasal side.

The disease being cancerous and so centrally located as indicated by its affecting so many organs, as throat, ear, eye and nose, I thought that it was beyond the relief of surgical skill, and, therefore, we attempted only tonic and ameliatory measures. If we had been able to have got him stronger I should have tried the erysipelas toxin and

bacillus prodigiosis. We hoped to obtain a post-mortem to verify our diagnosis of location, but were disappointed.

The expected termination of the case in death came in the early part of November.

DISCUSSION.

E. D. Brooks, M. D.: I think that we are all aware of the many troubles that come to the eye from the nose, but it is not generally known to the profession at large. It would be well if the general practitioner understood that when he comes to an obscure affection of the eyes it may arise from parts that are supplied by the same fifth nerve. I have had a number of cases that after they had gone the rounds of the general practitioners and of the exclusive eye specialists have had their trouble completely removed by the removal of some nasal irrgularities. We should all be careful to make thorough examinations of all parts supplied by the same nerve.

Bushrod W. James, M. D.: The removal and cure of terminal points of irritation is of great importance in all these cases. The large and extensively distributed fifth nerve is to be constantly borne in mind. On the same principle the removal of the points of irritation in and around the anus often cures distant troubles that have arisen in a reflex way. If we discover that such irritating points exist we should by all means get rid of them first and then we have a clear field for remedial relief.

A. Worrall Palmer, M. D.: Dr. Brooks's remarks reminded me of a case that has a bearing upon the subject and may be of interest. It was a case of ethmoiditis, and after I had relieved or cured the ethmoiditis, the girl said to me that she did not believe that her glasses suited her. I sent her back to the oculist, who looked over her and told her that they were not at all adapted to her, and asked her who had prescribed them for her. "You did, sir." He found on consulting his record that it was so. She had no need for glasses at all. The cure of the ethmoiditis had also cured the necessity of wearing glasses.

I am sorry that Dr. Garrison has stepped out, because he has a very interesting case to report right in this line that he had this last winter. I will try to get him to write it up for the society some time.

J. I. Dowling, M. D.: I consider Dr. Palmer's paper as quite timely, because there are many conditions of the eye which owe their origin to some abnormal condition in the nose, and this fact has not been sufficiently recognized. There is not a great deal about this relation in the literature of the day. I had one case about a year ago that resulted very fortunately for me. The patient had been treated for a number of years for chronic conjunctivitis of both eyes, combined with blepharitis marginalis. Among other things I examined his nose, for I knew that all ordinary treatment had been tried during the long time that he had been treated. The condition of the nasal cavity was a sight to behold, there was extensive atrophic rhinitis. After two weeks' treatment of the nose, the eyes cleared up considerably, and in a little time were well

to show that the danger of cocaine toxæmia is greatly lessened when used with Adrenalin. Never having had a case of cocaine toxæmia I am not in a position to offer comment upon this; but as it is a powerful heart stimulant we can readily see why this might be true.

Adrenalin is capable of sterilization without deterioration. This was not true of the supra-renal gland, and hence its great advantage over that product.

In rhinological work its field of usefulness is quite broad. For rhinoscopic examinations it is of great value. Under its use contraction of the tissue takes place, so that one can more readily diagnose the different lesions of the nose, such as hypertrophies, deviations of the septum, their location and extent, septal spurs, nasal polypi, foreign bodies or growths, and even adenoids in the post-nasal space. One could hardly mistake the soft round swelling on the interior ends of the inferior turbinates for the true bony hypertrophy. And the tissues contract more quickly and certainly under its use than under cccaine, and with less danger of toxæmic symptoms. If this were its only advantage it would be a boon to the rhinologist and a blessing to mankind.

But possibly its greatest advantage is that even the major nasal operations can be rendered almost bloodless. The profuse flow of blood which always accompanies nasal operations has ever been a great hinderance to successful work; but now by the use of Adrenalin the field of operation, being kept free of blood, is in constant view.

In acute coryza it relieves the swelling of the turbinate bones, thus ridding the patient, temporarily at least, of the profuse watery discharge.

For the relief of hay fever I have found it very helpful, and do not hesitate to use it freely as a spray in a 1 to 5000 solution. I consider it a real boon to sufferers from hay fever.

In ophthalmic work I have used it for a number of troubles. Acute conjunctivitis yields temporarily to its action and other local agents are helped by it to permanently cure.

In all eye operations it is of value on account of its hæmostatic and other properties mentioned above. Deeply imbedded foreign bodies are more successfully removed when it is used, chalazion, pterygium, muscle operations, iridectomies and sclerotomies are all better performed with Adrenalin.

It has been of material assistance to me in the treatment of troubles of the lachrymal duct. Through the writings of Dr. Dudley, of Louisville, Ky., I was induced to try it, and while I am not so sanguine as he,

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yet I have not been much disappointed. He says: "In many cases it will so reduce the swelling in the tear passages as to allow a stream of fluid to pass from Anel's syringe through the duct, without the use of a phobe." I have not been so successful. After using both Adrenalin and Cocaine I pass a medium-sized probe. Then Adrenalin is again used, which clears the way nicely, so that local medication is more easily accomplished.

The pains of episcleritis, scleritis, keratitis, iritis and even glaucoma are all said to be helped by its use. I cannot speak definitely as to the truth of this.

For pharyngeal and laryngeal work Adrenalin is very helpful in many ways. In acute tonsillitis and pharyngitis the relief from the fullness and pain is almost immediate, and the voice restored in a short while. It is best used in these cases as a spray. In the subacute and chronic varieties I have had no results from its use.

My experience with it in **otological work** has been quite limited, but for the removal of polypi and other operations in the canal it should serve us well. Dr. Dudley praises it in the treatment of the Eustachian tube. The catheter is introduced and a drop of the solution injected into the tube. He says that a number of cases of tinnitus without serious impairment of the hearing have been permanently relieved by two or three applications of Adrenalin through the catheter. I have used it in only one case this way and could see no results except that each time I thought some irritation was produced.

I use Adrenalin from a 1-1000 to a 1-10,000 solution, and while it acts well in any strength, I am inclined to use it not weaker than 1-5,000.

We have now looked at Adrenalin from only one standpoint, and have found that its advantages to the specialist are many. But our title implies that there are some disadvantages. What are they?

The first disadvantage I wish to mention, though small, yet no one will deny that it is a disadvantage, is that the color of the mucous membrane is so changed that we do not see things as they naturally exist. Hence it would not be hard to make a false diagnosis, especially with reference to the tumors of the nose.

The next disadvantage is in the fact that it is not a more stable product. It is much more so than the supra-renal, and yet that infection has taken place from its use is well authenticated. Agents have been tried as preservatives with more or less success; but no one has proven entirely satisfactory. The one does not preserve, while the other interferes with the action.

renal extract upon the human organism may be concisely stated as follows:

1. The pulse rate is retarded. This is due to stimulation of the vagus.

2. The force of the systole is increased. This is due to stimulation of the cardiac muscle, or of the cardiac motor ganglia, or possibly both.

3. The blood pressure is elevated from arterial constriction; the latter being doubtless the result of peripheral action, inasmuch as it persists after section of the spinal cord and nerves.

4. Diseased mucous membrane, peritoneum, or skin are blanched, also through peripheral action.

It is claimed by some observers that the elevation of blood pressure is due to central action, but I think the majority of observers incline to the opinion that it is due to peripheral action.

When applied to a mucous surface the capillaries of the part are markedly constricted, the tissues being almost completely blanched from local stimulation of the muscular coats of the capillaries.

Therapeutic Action. Floersheim believes that supra-renal extract is the most rapidly acting heart stimulant known, and describes over eighty cases of heart disease in which he gave the drug internally with very great benefit (in 3-grain doses).

From its effect upon the circulatory apparatus we would naturally expect that it would be beneficial in heart disease. As a heart stimulant its effects are seen at once when introduced into the mouth, because of its rapid absorption by the buccal mucous membrane. Cushny likens its effect to that of Digitalis. In all forms of hæmorrhage it seems to be of service. In epistaxis, hæmatemesis, hæmaturia, hæmaptysis, metrorrhagia, and even post-partum hæmorrhage it has been found useful. For the same reason it would be likely to be useful in active congestion and in the first stage of inflammation. In surgical operations of all sorts the most splendid results are claimed for it from both internal and external administration by a large number of observers. It seems likely to prove the remedy *par excellence* for arresting hæmorrhage and for chloroform narcosis. Its action is so prompt and so profound that it seems unnecessary to use it hypodermically; in fact, it is said that abscesses have been caused by injecting it subcutaneously. The solution Adenalin chloride may be applied to arrest capillary oozing from almost any situation in the body, since it is sterile and is kept aseptic by the presence of chloretone. Even should there be a doubt that it is entirely aseptic, it may be boiled for a few moments before using in a

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cotton-plugged test tube, as its activity seems not to be impaired in the least by boiling. Notwithstanding that it has only been a few months upon the market a great variety of uses has been made of it in various diseases, such as Addison's disease, in opium and morphine poisoning, rachitis, uterine disorders, heart diseases, albuminuria, diabetes, hæmophilia, etc., but it is in the diseases which most concern the members of this society, viz., those of the eye, ear, nose and throat, that it has been most used and has proven most successful.

For several months the writer has made use of Adrenalin chloride, more especially in diseases of the eye and nose. In operative cases it has seemed sufficient in the ordinary preparation of 1-1000. In most cases as a local application in congestive and inflammatory affections 1-2000 or 1-5000 has seemed sufficient. In the eye its action upon the vessels of the conjunctiva seems almost instantaneous, its full effect being apparently obtained within one minute from its application. The effects appear to last from fifteen to twenty minutes to several hours. While its first action seems to be superficial the relief of pain in deeper inflammations, such as iritis and cyclitis, shows that it extends beyond the capillaries, and therefore may be useful in restoring the normal tension and lessening engorgement of the deeper and larger vessels. Ingals, Reynolds, Solis-Cohen and other prominent observers commend it highly in acute and subacute inflammations, such as conjunctivitis, keratitis, iritis, and even deeper inflammations of the eye; in otitis, congestion and pain in the ear; in acute and subacute inflammation of the nose and throat, hay fever, epistaxis, tonsillitis, laryngitis, etc.

In operations upon the eye, nose and throat it is probably the most efficient hæmostatic at our command. Operations on pterygia and the ocular muscles are greatly facilitated and made practically bloodless.

I had used supra-renal extract with Chloretone in eye and nasal affections in various strengths and forms by spray, lotions, cotton pledgets, etc., up to a year ago, with varying success. The ordinary preparations became vitiated or inert so quickly that latterly I had begun to feel little enthusiasm or confidence in their use. My confidence was largely restored, however, on trying the solution Adrenalin chloride, and during the past year I have used it more or less freely, and I think with very gratifying success. I have used it both alone and in conjunction with other remedies and applications. I have confirmed, I think, the statement so frequently made that Cocaine and other applications act more efficiently after Adrenalin has been applied, especially in cases of inflammation, in which the vascularity prevents the full action of the Cocaine.

thought it indicated as a constitutional remedy. There must be a field for it, however, which it is our duty to explore.

My purpose in presenting the subject has been mainly to bring it before the society, that I with others may have the pleasure and benefit of hearing from those who have had more and better opportunity to study and wide experience in the use of the drug than myself. When it has become well understood and its place in therapeutices definitely assigned I believe it will be very serviceable in a wide range of conditions.

DISCUSSION.

W. C. Comstock, M. D.: Dr. MacLachlan has gone pretty well over all the uses of Adrenalin as it is understood at the present time, and leaves for discussion nothing but a multiplication of cases where this preparation merits all the prominence it is now receiving. It is very true that our offices are flooded almost daily with a grip full of nostrums highly recommended by so-called "eminent physicians" throughout the country, but we are loathe to turn down our tried and trusty remedies for new ventures, especially when experience teaches that this don't always work. But in Adrenalin we have an agent which deserves a conspicuous place among our drugs. I concur fully with the doctor in his experiences with this preparation as an aid in operations on mucous surfaces, both as an anæsthetic and in affording a bloodless field for the surgeon. I have never relied solely upon Adrenalin as an anæsthetic in operation, but find that an application to the desired surface of solution of Adrenalin chloride, 1-1000, followed in about three minutes with a two or four per cent. solution of Cocaine, offers a thoroughly bloodless, senseless area. In eye work I usually employ it in strength of 1-2000, although in greater strengths I have never seen any bad effects from its use. One case that came under my treatment about six months ago will illustrate its usefulness to the oculist. A young man had seriously burned his eye one year previous with a strong alkali, leaving the conjunctival vessels injected and swollen, the cornea somewhat hazy with little vessels running over its surface at the limbus. There was constant pain as if his eye were filled with sand, and the most intense photophobia. Even with the darkest glasses he was unable to go about much in the sunlight. He came to me with the histoy of having used all the "eye-drops" in the market, also ointments, with no relief, so I immediately thought of Adrenalin. He came to my office daily, when I made a thorough application of Adrenalin solution, 1-200, and gave him some of the same, but 1-4000 to drop in his eye every two hours during the day. In ten days time I sent the patient back to his home in the country apparently cured. He took with him some of the solution, with instructions to use it once a day for a month. Some weeks later he wrote me that he was free from pain and "felt like himself" once more.

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DISCUSSION.

W. C. Comstock, M. D.: Dr. MacLachlan has gone pretty well over all the uses of Adrenalin as it is understood at the present time, and leaves for discussion nothing but a multiplication of cases where this preparation merits all the prominence it is now receiving. It is very true that our offices are flooded almost daily with a grip full of nostrums highly recommended by so-called "eminent physicians" throughout the country, but we are loathe to turn down our tried and trusty remedies for new ventures, especially when experience teaches that this don't always work. But in Adrenalin we have an agent which deserves a conspicuous place among our drugs. I concur fully with the doctor in his experiences with this preparation as an aid in operations on mucous surfaces, both as an anæsthetic and in affording a bloodless field for the surgeon. I have never relied solely upon Adrenalin as an anæsthetic in operation, but find that an application to the desired surface of solution of Adrenalin chloride, 1-1000, followed in about three minutes with a two or four per cent. solution of Cocaine, offers a thoroughly bloodless, senseless area. In eye work I usually employ it in strength of 1-2000, although in greater strengths I have never seen any bad effects from its use. One case that came under my treatment about six months ago will illustrate its usefulness to the oculist. A young man had seriously burned his eye one year previous with a strong alkali, leaving the conjunctival vessels injected and swollen, the cornea somewhat hazy with little vessels running over its surface at the limbus. There was constant pain as if his eye were filled with sand, and the most intense photophobia. Even with the darkest glasses he was unable to go about much in the sunlight. He came to me with the histoy of having used all the "eye-drops" in the market, also ointments, with no relief, so I immediately thought of Adrenalin. He came to my office daily, when I made a thorough application of Adrenalin solution, 1-2000, and gave him some of the same, but 1-4000 to drop in his eye every two hours during the day. In ten days time I sent the patient back to his home in the country apparently cured. He took with him some of the solution, with instructions to use it once a day for a month. Some weeks later he wrote me that he was free from pain and "felt like himself" once more.

This is but one of many similar experiences I have had with Adrenalin in superficial congestions of the eye.

In ear work its field seems to be rather limited. I have given it several opportunities, but the results have not been very gratifying. In one case of acute otitis media where the drum membrane was red and sensitive some relief followed the application of Adrenalin, 1-1000, to the drum. This case did not go on to rupture of the membrane, but soon recovered by absorption. Possibly the treatment did some good. I will not take any further time of the sociey by citing cases, but will close the discussion by emphasizing what Dr. MacLachlan urges, *that* all take an active interest in this promising agent; study, experiment, then *write* what you find to be its uses and limitations.

C. J. Swan, M. D.: I agree with both of the essayists in the position that Adrenalin is one of the most useful agents we have. I make use of it is nearly all the ways that have been mentioned. In regard to the disagreeable effect in the way of sneezing, I have had that result in only three cases. The first case was an attack of subacute catarrh, in which it was used in solution of the strength of one in two thousand. The sneezing began twenty minutes after the application. The patient looked like a person suffering from a severe attack of influenza, high fever, water running from the nose, tears from the eyes at a tremendous rate, and constant sneezing. It lasted for twenty-four hours. The next case was one of frontal sinusitis. I used it with the idea of opening the passage to the nose. Attacks of sneezing came on, but it was successful in one way, for during a fit of sneezing the passage opened with a profuse discharge of mucus and pus. The patient expressed gratification notwithstanding the sneezing. The third case was similar to the last.

J. M. Fawcett, M. D.: I have had considerable experience with this remedy, and have met with drawbacks like those spoken of by Dr. Swan; a solution of one to five thousand caused, in some cases, a profuse watery discharge lasting an hour. I also had a number of cases of eye troubles that seemed to be aggravated by its use, especially when there was ulceration of the cornea. Glaucoma also seemed to be made worse by it. In general, however, it has served me well and given satisfaction, the few bad experiences simply making me more cautious in its use.

T. M. Stewart, M. D.: When I was on my feet before I intended to say a word about Thuja, but forgot it. It seves a similar purpose to Adrenalin, and may be used in its place. A clear solution of the extract in the proportion of one to ten will contract down the turbinated bodies in much the same way that Adrenalin does and enables you to make an examination of the nose. I should hesitate to use Adrenalin in ulceration of the cornea or when the corneal surface was abraded, just as I would hesitate to use Cocaine under the same circumstances.

Roy S. Copeland, M. D.: I want to speak about one use of Adrenalin where it is undoubtedly satisfactory. In cocainization of the eye, for cataract extraction, I have found that the eye seemed sensitive to

DILATATION OF THE EUSTACHIAN TUBE BY ELECTROLYSIS.

BY A. B. NELLES, M. D.,

Columbus, Ohio.

THE treatment of catarrhal conditions of the middle ear by inflation or vaporization will give negative or poor results wherever there is any material constriction of the Eustachian tube until that constriction is overcome. Not only does the narrowing of the tube interfere with the proper application of treatment directed to the middle ear, but it is in itself a strong factor in the cause and progress of the abnormal conditions present in that cavity.

In cases calling for inflation, when I find on using the catheter that the air does not pass through the Eustachian tube, or at least goes through in a thin unsatisfactory stream, and where ordinary methods of treatment do not, after reasonable time, relieve this condition, I have of late resorted to the use of the galvanic current applied by means of metal bougies.

The method of application is that recommended by Dr. Deuel, and the instruments used are those devised by him. The bougies are gold tips mounted upon wire, and in size correspond to Nos. 2, 3 and 4 of the French scale. The bougie and a small silver catheter having been rendered aseptic by boiling, and the catheter insulated by a wrapping of rubber tissue, the bougie is passed down through the catheter and its wire extremity, which will extend almost two inches from the mouth, is attached to the negative pole of the battery by a small handle and connecting cord.

The nasal and naso-pharyngeal cavities having been thoroughly cleansed and then anæsthetized by the application of a weak Cocaine solution, the patient takes the moistened sponge electrode connected with the positive pole in his hand. Then, with the patient's head supported by an assistant when possible, the catheter, with the tip of the bougie drawn snugly up to its beak, is passed in the usual manner. When it is fimly engaged in the orifice of the Eustachian tube the bougie is pushed gently into this canal until it meets with a decided obstruction. A current of from three to five milliamperes is turned on. Gentle but firm pressure should now be made against the constriction

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in the tube. When the bougie passes through the stricture at the first treatment it will usually do so after this pressure has been kept up for a minute or two. After it has been passed back and forth through the narrowed portion of the tube several times, it is pushed on into the middle ear; other strictures if met with being treated in like manner. The bougie is then pulled back into the catheter and the electricity turned off. The current should be of a voltage of from thirty to fifty, and a good rheostat and milliampere meter are of course necessary.

Sometimes several applications of electricity are required before the bougie can be passed though a stricture, and in any case I find that more than one treatment is usually necessary to produce good results.

The treatment produces a sense of fullness in the ear and reddening of the drum, and should not be followed by any attempt at inflation for four or five days.

On the first inflation little change will be noted, and often the air passes into the tympanic cavity even less freely than before the electrolysis was used, but at the end of a week or ten days improvement will have commenced. I find in some cases that the maximum improvement from a treatment is not reached for a month or more, and for this reason I never advise a repetition of the bougieing under three or four weeks time. I believe the best results are obtained from the use of ten minute applications of the minimum current recommended—that is three milliamperes.

In what experience I have been able to gain of this method during the past year and a half I have seen nothing to cause me to discontinue its use.

Please bear in mind that it is not put forth as the whole gospel of the treatment of chronic catarrhal otitis media. In what it has been intended to accomplish the results so far have been very satisfactory; as to whether they will be permanent or not I will hope to give a more valuable opinion at some future time.

The following cases will give a fair idea of results obtained:

Case One. Woman aged 42. Ringing in both ears so intense and constant that she described it by saying: "It seems that I shall go crazy if it does not stop." Examination showed the hearing for forced whisper and acoumeter normal, and the drum membrane normal in appearance with the exception of some retraction. On attempting to inflate by means of the catheter, however, it was with difficulty that a small stream of air was forced into the tympanic cavities. The patient complained of frequent colds, and the mucous membrane of the nasal and naso-pharyngeal cavities was found relaxed and flabby, with some

hypertrophy of the lower turbinal on the right side. Cauterization of this turbinal and treatment applied to the nose and throat, accompanied by inflation by means of the catheter three times a week for months, did not lessen the tinnitus and accomplished little in opening up the tubes. The electric bougies were then used at intervals of three to four weeks, five times in the right tube and four in the left. Inflation was kept up twice a week during the intervals. At the end of this use of the electrolysis the air passed smoothly and freely into each ear, and the tinnitus had practically disappeared. At the end of four months without treatment the patient reports occasional attacks of ringing but of a very mild character. This case is interesting from the fact that the hearing and drum membrane were both in good condition, and the tinnitus seemed to be due to a pair of very tight Eustachian tubes.

Case Two. Aged 38. Roaring in right ear. Hearing, acoumeter 30 in., forced whisper 30 ft., drum thickened and retracted. Upon inflation little or no air passed into the middle ear. Treatment of the nose and throat accompanied by inflation accomplished nothing. Electrolysis was then used twice in this ear, and at the end of a month the hearing for acoumeter had increased to 5 ft. 6 m., and for forced whisper to 45 ft. The patient at this time became irregular in coming for treatment, but at the end of nine months examination showed that the improvement was still present.

This case is ordinary in the conditions which it presented, and the improvement is not great. It is selected because there was no improvement gained from ordinary methods, and because the improvement from electrolysis was decided and rapid, and was still present after a year, with but occasional and irregular treatments during that time.

DISCUSSION.

G. W. McDowell, M. D.: With this method I do not see how you can be sure where the catheter is, and on that account it does not commend iself to me. You may push the tube in and keep on pushing, with no very definite knowledge of where it has got to, and if the point of the bougie happens to be out of the Eustachian tube you make a greater or less depression in the tissue of the nasal pharynx. I used an ordinary sized catheter without insulation. The lumen of the catheter is large enough to admit the passage of a slender bougie through it; this is useful because with it you have control over it and can direct it in the direction that you think best. You get the catheter in as nearly a correct position as possible and notice whether you can hear any air in the middle ear by inflation. Usually you will hear a high pitched sound indicating a stricture of the Eustachian tube. The current is then turned on, and acting upon the obstruction will overcome the stricture. The lack of power to direct the electrode is the only criticism I have to make on the paper. The method has been recommended by many and used in a large number of cases with success. I only want to emphasize the necessity of having the catheter in the right position before you turn the current. The more I use a catheter the less able I seem to be to tell

just where the Eustachian tube is. A flexible bougie of whalebone can do no damage in careful hands, and with it you can feel when you meet an obstruction, and also something by the sense of touch, about the nature of the tissue that you are running against. Formerly I had the bougie insulated, but once using an uninsulated one without any complaint on the part of the patient I have used that kind ever since.

E. D. Brooks, M. D.: One way of assuring yourself that the Eustachian catheter is in place has not been mentioned, and that is a positive one. It is feasible to see its position by means of a post-nasal mirror. With the mirror one can be positive of the proper position of the catheter. Did I understand Dr. McDowell to say that he used an electrode that was not insulated?

T. M. Stewart, M. D.: I have had the same difficulty in introducing the catheter, and I have given an order for some instruments that I have devised to overcome the difficulty. I have not tried them myself yet, but if they are useful will let the society know about them later.

G. W. McDowell, M. D.: In answer to Dr. Brooks, I will state that I have found by experience that it is not necessary to use an insulated catheter. I prefer the uninsulated, because it is less clumsy. The patients do not complain of the sensation and I have not noticed any difference between the two as far as results go.

J. I. Dowling, M. D.: I have had Dr. McDowell operate upon me and I can verify what he says about its being painless from personal experience. I felt absolutely no sensation of pain anywhere at the time or afterward. I felt an uncomfortable but not painful gentle giving way of the stricture.

A FURTHER REPORT ON PROTONEUCLEIN IN THE EYE AND EAR.

BY ISAAC C. SOULE, M. D., PH. D.,

Kansas City, Mo.

IN 1899 your essayist had the honor of presenting to this association of specialists a preliminary report of some original investigations he had been conducting for some time previous on the action of some animal extracts on the eye, ear, nose and throat. He wishes now to record the further results of three years' additional study and experience with one of the extracts reported at the time.

In the original paper two classes of clinical cases were given in order to illustrate what was termed the stimulating or nourishing action of the remedy and (b) its peculiar action on morbific tissue growths.

In correspondence with some members regarding their experience with this remedy some complaint has been made as to its reliability and uniformity of action in class a. The same trouble was encountered at times by your essayist, and led to quite an extended correspondence with the manufacturers as to the keeping qualities of the preparation. They said that it had been found that at first too high a temperature had been used in its manufacture, but that this with other changes had been remedied, rendering the present product stable and reliable, also that a new double strength special powder had been obtained, which was much more active than the old special powder.

Still occasionally there was a failure to obtain the desired results. A careful study of the class of cases in which these failures occurred has rendered possible their elimination to a great extent,

It tends rather to aggravate than cure those ulcerated corneal conditions accompanied by an excessive conjunctival and sclerotic inflammation or engorgement. Such conditions are not due to a lack of nutrition of the cornea, but to a lack of vitality from deranged nerve supply, hence protoneuclein is contra-indicated.

In some old syphilitic subjects, and those under active mercurialization, the results are nil, because mercury and its salts destroy the active principle.

It is useless also to hope to remove scar tissue of the cornea *completely* where the posterior limiting membrane has been involved. If

in cases of nebula a covering of clear transparent corneal tissue covers the external surface failure is sure.

On the other hand, in all recent cases of corneal opacity where there is reason to think the limiting membrane is unimpaired ultimate success may be anticipated, no matter how dense the scar tissue. Old opacities other than syphilitic have always improved, and where opacity was limited to true corneal tissue or external layers of the same, failure in restoring vision has never occurred, the cornea usually regaining absolute transparency.

It is best where considerable injection or inflammation is present to reduce the same before protonuclein is used. Good results have been obtained in cases where considerable injection was present by first using a solution of 1-5000 of Adrenalin followed in about five minutes by the protonuclein.

As a dressing for a ragged or torn corneal wound particularly, it has proven a decided success.

As an accessory in the treatment of trachoma and trachoma pannus, it has proven invaluable and a never failing remedy.

Cocaine should always be used before the remedy, and the powder kept tightly corked and in the dark.

A few clinical cases will serve to illustrate the methods of use, results, etc.

Case One.—Mr. E. S. N., æt. 43, plow fitter. About a week ago was struck in O. D. by flake or chip of red-hot steel, cutting and burning the cornea. Was seen by a local M. D., but did not receive proper care. When seen the eye was very much engorged, bulbar and tarsal conjunctiva œdematous, sclera very much engorged, sloughing ulcer covers lower temporal two-thirds of cornea, pus infiltration of lower nasal quadrant very painful, profuse lachrymation, with excessive photophobia. Treatment: Cleansed with 1-1000 Formaldehyde solution. Rx *Hepar.* Hot applications ordered. Seen by my partner, Dr. H. F. Fisher. Next day I saw the case, which was in practically the same condition; in addition to above used Protoneuclein. Very much worse in every respect. Treatment changed to hot water bath for five minutes, followed by cold water bath for same period, repeated three times every two hours. Locally saturated solution of Boracic acid containing five drops Hydrastis to viii oz., to which were added a few grains of Sodium chloride and enough Adrenalin to make a 1-3000 solution. Remedy (*Hepar*) continued. This controlled the inflammation in a few days, but the ulcer refused to heal. We now changed the treatment again, curetting away all necrosed tissue, the eye filled full of Protoneuclein special and bandaged. Ulcer healed quickly under this dressing, leaving a slight scar, which under Protoneuclein and massage, through the lid, further disappeared. Was seen recently, almost two years since

dismissal, has good vision and but very slight scar, which has to be looked for sharply in order to be found. Says eye is as good as before the accident.

Case Two.—C. M. W., æt. 35. Had ulcer of cornea in infancy, leaving decided nebula directly over the center of the cornea. Seems deep in the tissue, has clear, bright, smooth corneal tissue covering. Treatment: Used massage with Protoneuclein direct to the cornea; also through the lids for six months. Vision improved to about twice the former activity, but failed to entirely remove the scar tissue.

Case Three.—J. B. F., æt. 52, farmer. Has had trachoma for past eighteen years. Been treated by five or six oculists, the three leading men of the city having had a try at it. He was under the care of the leading old school oculist of the city for five years, with but slight temporary improvement. Two years ago began to grow worse. Present condition: Led into our office, being unable to see objects in the open, size of a horse and wagon, is to all intents and purposes blind, cornea covered with dense pannus tissue, lids very much thickened, thickly studded with trachomatous bodies and old scar tissue. Prognosis was very doubtful. Treatment: Lids cocainized and thoroughly massaged with Protoneuclein, using a horn spoon; cornea also massaged. Next day fresh Arg. iod. mixture was plentifully applied to the lids and cornea, and massage used through the lids. This treatment was continued in alternation with the above for the entire course of (ninety days) treatment, at which time patient was discharged with sufficient vision to see to read No. 3 Jaeger, when corrected with proper lenses. For the past three years this case has been kept under observation, which has demonstrated that the cure is final, as vision constantly improves.

Case Four.—J. A., æt. 38, miner. As the result of an accident from premature blast of giant powder, right cornea completely covered by dense, opaque scar tissue. Was only able to discern bright light. Was placed immediately upon Protoneuclein locally, with local massage, using a horn spoon on the cornea for first two months. This was followed by massage through the closed lids for about four months. An improvement was noticed at the end of the first month, and continued steadily until opacity had entirely disappeared from the upper and outer two-thirds of the cornea, leaving only two fine lines converging V shape to near the center of the cornea. There were dense, cicatricial bands extending through the entire thickness of the cornea, and but little hope was entertained of further improvement. Patient's wife, being an intelligent lady, was instructed how to give the treatment, and has continued the same at home. Six months later patient had sufficient vision to do rough work about the home, such as sawing wood, etc.

These results have been repeatedly verified, and above cases or similar ones could be many times duplicated from case records, but sufficient have been cited to illustrate the different actions of the remedy.

It is hoped that the members of this Society will take up the study of this remedy and assist in making further developments.

DISCUSSION.

Geo. H. Richardson, M. D.: In the main I can heartily concur with the statements and facts as set forth in his paper by the essayist. I, too, have noticed the variations of actions of the product in question, the same case occasionally showing a dissimilar effect when a new bottle of the powder was used; but within the last year or so this capriciousness does not appear so noticeably as formerly, undoubtedly for the reason that Dr. Soule advances the perfectng the process of manufacture, and further, the gradual replacing of the old stock on the market by the new and more perfect article.

The report of Dr. Soule's first paper, published in 1899, was what first drew my attention to the practical use of the Protoneuclein in eye and ear work as a local adjuvant, and my thanks are due to the doctor for the addition of an invaluable aid to my armamentarium. It was the first published account of its practical use in this work that I had encountered up to that time, and the doctor certainly ought to be congratulated for his originality in this field.

I have used the Protoneuclein both in powder form and in solution, dusting the dry powder over the irritated surfaces only after thoroughly anæsthetizing the tissues with a five per cent. solution of Cocaine. This procedure I found produced the best results, as it obviated the tendency to rub the lids which would increase both the congestion and irritation, to say nothing of the danger of grinding off the corneal and conjunctival epithelium by the undissolved crystals of the powder. The solution I used was fiften grains of the powder to two drachms of distilled water instilled as a collyrium. I give particular instructions to keep this solution in a cold place, refrigerator if possible, and tightly corked, and must be made fresh every day in order to obviate all liability to decomposition, and thus avoid any possible danger of septic infection.

My successes have not been as brilliant as Dr. Soule's, but sufficiently so to cause me to be an ardent advocate of the product in question in those cases in which it is indicated, and when fully indicated, I firmly believe its use will meet our most sanguine expectations. On the other hand, when it is contra-indicated its use is not only disappointing but may be possibly harmful, as is well instanced by the results produced in one case of chronic purulent otitis media. Silicea 30x had very gratfyingly cleared up the purulent discharge, and the patient was improving in every respect when in an evil moment I yielded to the temptation of hastening the reparative process and used an insufflation of the dry Protoneuclein with most disastrous results, as evidenced by agonizing pain and the reappearance of the suppuration in a more copious degree.

It is in the eye that my best successes and fewest failures have been recorded, and these cases ranked from simple conjunctivitis, trachoma, etc., to corneal ulceration and pus in the anterior chamber. My two worst cases were in elderly people, both females, eventuating in one instance in complete recovery from a subacute attack of the most extensive ocular inflammation of both eyes it has been my good fortune to

come in contact with. The patient in question was 77 years of age, and had been for years a constant sufferer from articular rheumatism, which had left her hand in a badly deformed condition. Just prior to the attack of the conjunctivitis she had been prevailed upon to take a series of mud baths at one of the medicinal springs, and while in one of the baths some of the mud had entered the eyes and set up the irritation. In this case Rhus tox. 2x combined with the local use of the Protoneuclein, both dry and in solution, produced most satisfactory results.

The other case was consequent to a blow across the right eye from a piece of flying wood. Acute glaucoma, pus in the anterior chamber and pronounced staphylomatous swelling of the cornea were present when I first saw the case. Evacuation of the pus gave temporary relief from the intense pain, but curettement of the cornea, the internal use of Duboisine 6x and Arnica 6x and Protoneuclein locally did not alter the conditions until enucleation solved the problem and saved the left eye. As an after dressing Protoneuclein powder was used with satisfaction.

Dr. M. L. Lord, of Rochester, N. Y., was advised some time ago to use Protonuclein for atrophy of the optic nerve. He says that at that time he was very weak, with a constant sense of extreme exhaustion, but the Protoneuclein soon altered these impoverished conditions and made a new man of him. He is still taking it and will contiue its use as long as he experiences any improvement and benefit. This is an excellent illustration of its stimulating properites, and by increasing the nourishment induces actual atrophic changes.

CHRONIC NASAL OBSTRUCTION; ETIOLOGY AND DIAGNOSIS.

BY IRVING TOWNSEND, M. D.

New York.

NASAL obstruction is such a frequent symptom in cases applying to the specialist for treatment that its importance is fully understood and its causes generally recognized. We see the *usual* forms of obstruction so constantly that we expect to find them, and for this reason sometimes overlook the conditions *less frequently observed,* which may furnish the key to successful treatment.

For convenience, and as a basis for a more complete classification, the causes of nasal obstruction may be stated as follows, though it will be apparent that several of them may be present in the same subject:

I. Vascular Engorgement.
II. Inflammation and Œdema.
III. Deformities.
IV. Hypertrophies of Turbinated Bodies.
V. Hypertrophies of other structures.
VI. Neoplasms, or new growths.
VII. Disease.
VIII. Traumatism.
IX. Foreign Bodies.

I. VASCULAR ENGORGEMENT implies a soft, swollen condition of any or all of the turbinated bodies, usually accompanied by congestion of the nasal mucosa, and resulting from repeated inflammations or a derangement of the vaso-motor nervous system. Neurotics, pregnant women, and those who are exposed to sudden changes of temperature or bad ventilation, are favorable subjects. The pressure of tumors, reflex irritation in distant organs, inhalation of dust or irritant vapors, or a super-sensitive mucosa, may be causes.

II. INFLAMMATION AND ŒDEMA. Sub-acute and chronic inflammation (from a variety of causes) prevents free nasal respiration, and is often responsible for permanent obstruction. If the accessory sinuses be involved, ethmoiditis and disease of the middle turbinated bones may be present. *Œdematous swelling* is a frequent result of obstructed circulation, and polypi, or the so-called polypoid degeneration, may de-

velop, especially if the obstruction is of long duration. Traumatism is often followed by a slow inflammatory infiltration that persists for years, involving the bony and cartilaginous structures, and ultimately producing a partial or complete occlusion of the air passages.

III. DEFORMITIES may be due to anatomical peculiarities, defects or anomalies of development, injuries at birth or subsequently, and to certain diseases causing loss of tissue, or of a malignant nature. A high palatial arch and very narrow nasal passages often co-exist, and constitute the most difficult class of cases to treat. Traumatism is often responsible for deformities of the septum, which vary from slight deviations of the cartilage to a series of deflections or dislocations of the bone and cartilage at different angles, more or less thickened and having irregular protuberances commonly described as ridges or spurs. In a comprehensive paper on the "Anatomical Developments of the Nasal Septum," by Freeman, he makes the following interesting observation: Excepting in the instances where deformities of the septum are due to traumatism or disease, we must look upon them for the most part as the results of evolutionary, or, perhaps, more properly speaking, of devolutionary changes. The external nose of certain peoples, the African negro, Egyptian, American Indian and others, is often more or less characteristic, and it is the result of centuries of exclusiveness which thus preserved the purity of the races. The high or leptorhinic nose of the dolichocephalic head needs a greater development of the septum than the low nose of the brachycephalic type; consequently, in the intermarriage of different races, should the nose tend to follow the leptorhinic character, say, of the father, while the rest of the facial bones follow the platyrhinic type of the mother, there must necessarily be a bending of the septum, locked, as it is, in a frame already ossified. Broca, who has given special attention to the enthnological study of the nose, finds that when one race has conquered another, the nose, as generations go by, begins to follow the type of that of the more numerous race." (Laryngoscope, October, 1901.)

IV. HYPERTROPHY OF THE TURBINATED BODIES is the most frequent cause of nasal obstruction, and exists to some degree in a majority of the patients who consult the specialist. One or all the turbinates may be involved in the hypertrophic process, which may affect only the bone, the sub-mucous tissue, the mucosa, or all of them. The density of the swelling depends on the relative proportions of bone, fibrous tissue and vascular erectile tissue composing its structure. It must be understood that hypertrophy is sometimes a process by which

nature establishes a balance between the nasal cavities, and compensates for the difference in calibre due to septal deflections or other deformities. Recognizing this fact, it is obvious that size is not an indication for operative treatment in any case of hypertrophy. It is rather a question of how much trouble is caused by the presence of this growth, either from pressure or by obstructing the current of air, or deflecting it from the normal course.

When several hypertrophies exist, it requires care and good judgment to determine which should be removed and which allowed to remain. "When you see a head, hit it," may be a good rule in warfare, but it does not apply here, as we all know from observation of these cases, and the mistakes made where in operating *anatomical perfection* had apparently been the sole guide. Hypertrophies, which occupy the unnecessary space in a large nasal cavity, often serve a useful purpose, while much smaller ones cause obstruction or pressure if the nostril be narrow. Repeated "colds," the inhalation of dust or impure air, or inflammation from any other cause, may induce hypertrophy of the turbinated bodies.

V. NASAL OBSTRUCTION may be the result of hypertrophy, which does not involve the turbinates alone, but affects the mucosa of a part or the whole of the nasal cavity, as well as the underlying connective tissue. Hypertrophy of the pharyngeal tonsil is a very frequent cause of nasal stenosis, especially in children; and when present for a length of time has a tendency to induce hypertrophy of the turbinated bodies. This latter may result from abnormal conditions of the air pressure in the nares, and, in part, from the irritating secretion, which is more or less constantly expelled from the posterior nares in these organs.

VI. NEOPLASMS, OR NEW GROWTHS, whether benign or malignant, are frequently the cause of nasal obstruction. Myxomata are the most common; after which fibromata, sarcomata and carcinomata follow in the order named. Other varieties of growth may develop in this region, but are less common.

VII. In addition to the diseases mentioned above, the lesions of tuberculosis and lupus, and much more frequently those of syphilis, occur in the walls of the nasal fossæ. Syphilitic gummata attack the deeper structures, involving bone, periosteum, cartilage and cellular tissue—and unless arrested by treatment may cause permanent stenosis.

VIII. TRAUMATISM may produce immediate obstruction by a fracture or dislocation of the septum, or, more remotely, by the develop-

ment of a hæmatoma, which is liable to be followed by abscess, ulceration and synæchia.

IX. FOREIGN BODIES introduced into the nose obstruct the respiratory passages, and unless removed promptly become embedded in exuberant granulation tissue, which may permanently occlude the affected passage.

DIAGNOSIS. With the requisite instruments and a little practice in their use any physician can make an examination of the nasal passages, and often arrive at a fairly accurate diagnosis, but in some cases the utmost skill will be required to ascertain the exact cause of the obstruction. If, however, the clinical history and age of the patient be borne in mind, and the physical examination be thorough, including bacteriological and other microscopical tests, there will be very little difficulty in making a correct diagnosis.

DISCUSSION.

Dr. Burton Haseltine: Dr. Townsend has given us a paper of such comprehensiveness that it would be difficult to mention a cause of nasal obstruction that he has not touched upon. His classification seems to me excellent, although for clinical purposes the number of headings might be reduced. The first two groups, "Vascular Engorgement" and "Inflammation and Œdema," are so closely allied that for practical purposes they may be merged, making one group of inflammatory swellings, which the author rightly places first.

Probably no other variety of nasal obstruction is more frequently encountered than this, and because of its protean character, no other is so apt to lead us into error. Other forms of nasal obstruction are generally apparent to the examiner at once, but in these cases the nose may upon examination present very nearly the normal appearance. It is well known that the tissue over the anterior, and, to a less extent, over the posterior and of the inferior turbinate, is of a cavernous nature. The peculiarities of this tissue, however, under abnormal conditions are not so well understood. Under the influence of some of the causes mentioned in the paper this tissue often becomes so susceptible to engorgement as to constitute a sort of reservoir, receiving or discharging blood with remarkable facility and sometimes with no apparent reason. In many such cases even posture will determine this condition, so that we have patients who complain of discomfort and difficult breathing at night, who, when examined in the erect posture at the office, present very little upon which to base a diagnosis. These are apt to be the mouth breathers without apparent cause.

The writer's explanation of idiopathic malformation of the nose is interesting and may help us to understand the frequent deformities occurring in young and rapidly growing boys.

The other forms of nasal obstruction are, as he says, easily discoverable and fairly well understood. I would not, however, as he seems to do in his closing paragraph, minimize the importance of the rhinilogical examination. An adequate knowledge is in no case gained by merely looking into the nose. The ability to properly and thoroughly examine the nasal chambers and their contents is a matter of considerable skill, while a correct understanding of the relationship between local and general conditions can only come from experience and careful study.

CHRONIC NASAL OBSTRUCTION—TREATMENT.

BY JOHN B. GARRISON. M. D.

New York.

THE etiology and diagnosis of chronic nasal obstruction having been exhaustively treated in this society at the present session by other members, it is only necessary for me to proceed at once with the consideration of the means at hand for the cure of the various conditions found to be the cause of the stenosis.

It is not a condition confined to adult life, for an acute rhinitis in little children left to take care of itself does not require much encouragement to soon become chronic, and I would like to say at the outset of my remarks that the treatment of chronic obstruction should begin at its very inception, if the cure is to be all that is hoped for. Unfortunately, we are not often permitted to see the patient until much harm has been done.

Cleanliness is always to be the first point to be obtained and must be persisted in until the cure is complete, no matter what the condition before us. The proper homœopathic remedy will cure many cases if seen in an early period of the disease.

Hypertrophic rhinitis is so often present that many cases have come to look upon it as almost a necessity of childhood and to feel willing to await the coming of the time when nature shall set up a reaction for relief, not realizing that great mischief must have been done when that time arrives.

We have here hypertrophies of the anterior and posterior extremities of the inferior turbinates; less frequently of the middle turbinate, and more or less of the septum itself. The most common hypertrophies, those of the anterior portion of the inferior turbinate, may be reduced by the use of the cautery, both the galvano and chemical cautery being available, or galvanism may be substituted with good results in many cases.

To use the galvano-cautery, having the proper facilities for heating the instruments, the first thing to do is to cleanse the nasal cavity by using an alkaline solution, glyco-thymoline being a favorite one with the essayist; then apply a four per cent. solution of cocaine to the parts with a pledget of cotton upon an applicator, allowing it to remain in

contact several minutes in order that the anæsthesia may become perfect. Then, selecting a knife with a flat surface, heat it to a *dull* heat after it is inserted and in position, press the flat side against the hypertrophy and draw slowly outward. Too great stress cannot be laid upon the necessity of avoiding too high a degree of heat in this operation, for as contraction of tissue is what we desire and as *the most contraction follows a moderate heat,* it is wise not to forget this. The operation should not be repeated until at least a week, and frequently longer, has elapsed and as soon as the necessary amount of contraction has taken place operations should cease.

Electrolysis is not so rapid in its action as the galvano-cautery, but being painless, is to be commended in many instances.

An ordinary galvanic battery, either of dry or fluid cells, of sufficient strength to do effective work, may be selected. The use of a bi-polar needle—as suggested by Shepergrell—offers the best result, as the contractile effect of the positive pole is obtained in connection with the greater destructive effects of the negative. The positive neeedle should always be made of gold or platinum. In inserting the needles, care should always be taken to be sure that they do not meet in the tissues. To prevent any soreness not absolutely necessary, a light coating of shellac varnish should be applied to all of the needles except the half-inch nearest the point, which will prevent any electrolytic action taking place at the point of insertion and leaving a point of entrance for pathogenic germs. Care in all details should be taken to prepare the needles with regard for perfect asepsis.

Where the mono-polar needle is to be used, the same methods of preparation are to be used and the dispersing electrode may be placed at some indifferent point, the face, neck or chest, but by reason of the wide separation of the poles the time consumed in producing a given effect is necessarily much greater; an effect that with the uni-polar method will take fifteen minutes can be produced with the bi-polar in two minutes. In either of these methods a milliameter should be used in order to accurately determine the amount of current used, which in most cases will be from 20 to 30 m. a. When the needles are withdrawn the openings should be covered with collodion to effectually prevent the entrance of pathogenic germs.

Electrolysis may be produced by introducing a flat electrode between the opposing surfaces of the turbinate and septum, thus avoiding any puncture and, in cases not too far advanced, is capable of producing good results.

Chemical cautery may be effectually produced by using either tri-chloracetic or chromic acid, and, where the galvano-cautery is not convenient, may be used. The extreme difficulty in controlling these agents locally is the chief objection against their use. Tri-chloracetic acid should be kept in a glass stoppered bottle, as it is very deliquescent. To apply it to the hypertrophied mucous membrane of the turbinate of which we have been speaking, the best form of applicator is made by taking a piece of copper wire about one-sixteenth of an inch in diameter and have about half an inch slightly flattened, the applicator being altogether about one foot long. Laying a small crystal on the flat side of the applicator, pass it through the flame of an alcohol lamp just sufficient to heat it slightly so that it will recrystallize and adhere to the copper. Any particles that have not become adherent by this process may be wiped off with absorbent cottton, and great care must be taken to see that no loose particles remain or that the whole has not firmly adhered to the copper, which will not be the case if the heat has not been just right. The parts to be cauterized must then be thoroughly cocainized, and just previous to the application of the acid, *wiped perfectly dry*. A strong solution of Sodium bicarbonate should be conveniently at hand and in it an applicator loaded with a piece of absorbent cotton. Now introduce the copper applicator with the crystallized acid upon it into the nostril that has been well dilated with the nasal speculum, touch the turbinal lightly with the crystals and draw forward, leaving a line of eschar. Then quickly apply the bicarbonate solution with the applicator that has been prepared to prevent the acid from spreading over any larger surface than is intended, and the quicker this is done the better the results will be.

In using chromic acid an ordinary blunt pointed silver probe may be heated in the flame of an alcohol lamp, then dipped into a bottle containing the crystals of the acid, when, upon withdrawal, some of the crystals will be found adherent to the point. Holding it again over the flame a moment will cause the crystals to fuse in a smooth, round bead, which will cool in an instant and is ready for use. The application of the acid and the use of the solution of Bicarbonate of soda is identical with the instructions previously given for the use of the tri-chloracetic acid.

Posterior hypertrophies of the inferior turbinate are difficult to treat successfully by the methods just recounted and the use of cold wire snare seems to offer the best means of removal.

The snare best adapted to this work in the writer's hands is one that

consists of a straight canula into which a stylet, having two perforations for a wire loop, slides. When the stylet is pushed all the way through the two holes appear at the end, and through these the wire is threaded, according to what position the loop is intended to assume. From three and one-half to four inches of No. 5 piano wire is cut off for the loop and is held in position by bending the wire back a little at each end after threading and the turning of a screw at the upper end of the stylet, causing it to draw the loop into the lower end of the canula, will securely fasten it.

If the loop is desired to be vertical, both ends of the wire should enter the stylet from the same side; if it is to be horizontal, then thread it, one end from one side and the other from the opposite. The nasal cavity should be thoroughly cocainized by placing cotton pledgets, soaked in a ten per cent. solution of cocaine, in apposition with the parts to be removed. Also, apply a 1 to 2,000 solution of Adrenalin slightly if it is desired to make the operation entirely bloodless, although where the snare is used it is not necessary to use this precaution for the hæmorrhage is usually very little. Knowing the location of the hypertrophy, the loop can be easily brought in easy contact with it, but the rhinoscopic mirror or even the finger may have to be used to ensure the catching of the enlargement in some case.

Having surely encircled the mass to be removed with the loop, draw the stylet as far forward as possible and then tighten it with the thumb-screw, giving it a turn or two from time to time, gradually cuttting through, and when the canula can be drawn out, which will be the case as soon as the wire has cut its way through, the part removed will usually remain in the naris, to be removed with the forceps, which is easily done. Many direct the patient to blow the nose forcibly, thereby expelling the mass quite easily, but this is objectionable, as it frequently induces a hæmorrhage. If hæmorrhage does occur it may be checked by the use of Adrenalin sprayed into the nose; or the use of a hot salt solution of the normal strength; or the nose may be plugged with a piece of Bernay's sponge if the point of hæmorrhage is situated so that pressure can be made. The cases where hæmorrhage is severe are, however, rare. The tendency to hæmophilia should be carefully inquired for in all cases of proposed nasal surgery.

After the operation it is only necessary to keep the parts clean by use of the syringe or spray, using some of the various alkaline antiseptic solutions once or twice a day for a few days.

Atrophic rhinitis frequently causes an obstruction to nasal breathing

when to all appearances there is plenty of room for the passage of air between the septum and turbinals. The excessive dryness of the mucous membrane causes a sensation of stuffiness that is fully as annoying to the patient as when the naris is really occluded.

There is usually, however, a considerable amount of mucus which has been deprived of its moisture and which is now very adherent to the membrane and is more or less advanced in the process of decomposition, and from which, consequently, a fœtid odor emanates. Great pains are necessary at the first treatments to remove all of this and to leave a clean mucous membrane. This is difficult, and can only be accomplished by using with a post nasal syringe an alkaline solution such as Glyco-thymoline, and frequently a spray of Marchand's Hydrogen peroxide, one part to four of water. I have found great assistance in cleansing the membrane and inducing a more healthy condition by using in the nasal cavities the following:

℞. Succus calendulæ .....ʒj
Glycerine, c. p.
Aquæ dest .....a. a. j. q. s., ℥vi

M. Sig. Apply to the nasal mucous membrane thoroughly with cotton pledget wound on an applicator.

I have found nothing that seems to give tone to the atrophied mucous membrane as well as the above and sincerely recommend it. The patient must be made to understand that good results will only follow frequent treatments, and I consider that if they will not come to the office every day for the first two weeks for treatment, it is better not to attempt any at all, if you expect to receive any credit from the patient.

The middle turbinate is frequently the subject of hypertrophy, but if any portion of it is to be removed it should be only just enough to relieve the pressure, for if it is all removed the dryness that follows a little later is likely to be very annoying.

The operation for the removal of a portion of the middle turbinate is best done with some form of cutting forceps, many varieties of which are made, the chief requisite being that they shall be small enough at the cutting part to enable them to enter between the septum and the part to be excised and strong enough to cut without springing. The nose should be thoroughly cocanized and an application of Adrenalin made just before commencing. Just sufficient in the operator's judgment to allow free space is all that should be removed, and care should be taken to see that the edges are left smooth.

After the operation the part should be separated by a plug of some kind, and one that is easily used and perhaps the best is to take a strip of sheet celluloid, such as is used by ladies in making different kinds of fancy work, cut it of convenient size and, after making it sterile, insert it, either alone or with a strip of lintine, on the side next the septum. This should be removed and the cavity well cleansed every day for a week, when no further attention will be necessary.

Spurs and ridges extending from the septum across the naris occlude the passage more or less, as they jut out, and must be removed if they give rise to any difficulty in respiration or drainage.

The saw or trephine give the best results usually. The saw may be used by hand or the mechanical saw may be the one chosen if the motor is at hand. The usual method of cleansing the nasal passages are used to prepare for an operation and cocaine applied in a ten per cent. strength until perfect anæsthesia is obtained. Then a light application of Adrenalin is made with an atomizer or cotton on an applicator, so that the operation may not be retarded on account of the excessive flow of blood. If the mechanical saw is at hand the operation can be much more quickly done and the pain, which is sometimes considerable, even with the cocaine, when the slower method is used, is scarcely noticed, for the work is so soon over. The hand saw will be in most cases the one that will be used and may be made with two blades, made to change for up or down work, by simply turning them in the handle, one for each side, or they may be forged as a complete saw, four altogether, one for the right side up and one down, and one for the left side up and one down. Two saws will, however, usually be sufficient, for it is generally best to begin at the base and saw upward, as the flow of blood will not obscure the line to be taken, as it would if the saw had entered at the top. When the saw has passed through the bony or cartilaninous portion of the spur or ridge, it should be removed and the mucous membrane should be severed with a pair of angular scissors, holding to the fragment with a pair of mousetooth forceps. After trimming the edges smoothly, cut a strip of sheet celluloid so that it will fit the naris snugly and place it against the cut surface and pack a strip of sterile gauze firmly against it, to prevent secondary hæmorrhage. This may be left for two days before it is removed, when it should be carefully done and the nostril gently but thoroughly irrigated with a saline solution and then a bland oil applied; after which the packing should again be placed, and being changed every day until the healing is far advanced or the tumefaction sufficiently reduced to avoid the danger of adhesion.

Adenoid vegetations are among the most frequent causes of nasal obstruction, and when advanced to the point that makes an operation advisable should be removed without further delay, as the effect upon the growing child is bad in many ways.

Some operators prefer to do the operation by having the child held by an assistant, which can be easily accomplished as far as the actual work is concerned. But the fright to a delicately organized child from being forcibly restrained and at the sight of the blood as it pours over the face and coverings is more than likely to do more harm by far than the taking of an anæsthetic. Then, too, the operator, unless he be more careless of a child's feelings than the speaker, is likely to hasten too much to be sure that he has removed all that may be necessary and secondary operations are more likely to be needed.

General anæsthesia is therefore favored by your essayist and, much as it has been condemned, he prefers chloroform. It is believed that if chloroform be administered carefully, slowly, drop by drop, one or two drops per second, not a spoonful at a time on the mask, it is perfectly safe to use and is muck quicker to take, produces less mucus in the fauces and is much quicker to recover from. When given with an inhaler in which it is mixed with air, or oxygen, if desired, the amount used is almost infinitesimal and is the ideal way. Whether it be chloroform, ether or nitrous oxide is for the operator to choose; the latter, however, is too fleeting in its effect to be desirable usually.

The early morning hour seems the most desirable time for operating, on children especially, and is chosen by me if possible.

It is my custom to place the patient, when fully anæsthetized, upon the right side, securing the position by placing sand bags at the back and, standing at the head with my left side toward the table, insert the index finger of my left hand into the mouth, that has previously been opened by the assistant and the gag placed in position, back into naso-pharynx to locate the glands.

Then, taking a Concannon forceps, insert them closed and in one or more sweeps remove the largest amount of the adenoids. It is my habit then to use a pair of Loewenburg forceps to remove any small pieces that may remain and the operation is soon completed.

With this procedure I do not find the use of the curette particularly necessary and scarcely ever use it. Many oprators, I am aware, use curettes almost exclusively, but with me I am better satisfied to search for the small masses and pick them off cleanly with the Loewenburg forceps. When the curette is used, however, it should be with a light

hand, for if much force is applied the delicate mucous membrane may easily be stripped and harm done.

The flow of blood is usually quite free for a minute or so, but with the head kept well on the side the most of it will escape from the mouth, and though a considerable amount be swallowed, it need cause no alarm, for it is usually soon thrown off by emesis.

Unless the hæmorrhage continue for an unusual length of time I do not use any hæmostatic, not only because it does not seem to be necessary, but because I believe that fluids thrown into the naso-pharynx with the patient prone or on the side may possibly do an injury by entering the eustachian openings. The instillation of a bland oil by dropping it into the nares with a simple glass medicine dropper, four or five drops at a time, is beneficial for a week or two, until the healing has become complete, and I always advise it.

Deviations of the septum, being frequent, are the subject of our attention very often and the question arises as to the best method of overcoming the stenosis caused thereby. Where the deviation is such that by cutting off a piece of the encroachment we can produce free drainage and respiration without perforating the septum, that is the best method of procedure. If, however, there is danger of our having a permanent perforation some other way should be substituted. Sometimes we will find the anterior part of the septum projecting over and quite occluding one side, while the opposite one will present a normal septum. These are cases where the deflection is traumatic and the cartilage has been split. If we dissect up the mucous membrane on the occluded side and remove the cartilage, leaving the normal half for support, it is usually sufficient, the membrane dropping down, heals quickly and a good result can be expected.

It is not within the scope of this paper to give in detail the methods of all the most noted operators; that is a matter of individual research. The necessity before us is to overcome the deflection and to bring the septum up to its normal degree of perpendicularity as far as it is possible to do so, and to obtain this we must do certain things. First, we must bring the septum up in position, and to do so we anæsthetize the patient, cleanse the nasal cavities and make them as nearly aseptic as is possible and spray with Adrenalin. Then, having determined the point of greatest concavity, make an incision throughout its length entirely through the septum. We then make another incision in the centre of the one already made and at right angles to it. This makes four points which, by pressing toward the convex side forcibly enough to break the

cartilage, will represent four triangles. It is very essential that these four triangles be broken back in order that the pressure is removed which has already acted as a force to keep up the deflection. Having by examination with the finger assured ourselves that the segments are freely movable, then take a pair of nasal forceps and loosen the attachment of the cartilage at its base so that the whole septum may be moulded to the proper shape.

The septum is then to be held in position by a nasal splint, or tube, which is made of vulcanized rubber or some metal which can be shaped to fit the part operated upon. I prefer the tubes made without any perforations, as the holes are of no benefit, being quickly filled with mucus or tissue, and are objectionable on account of the liability to induce hæmorrhage upon removal.

Tubes should be chosen, one for each side, and of proper size to give good support without undue pressure. They may be allowed to remain for twenty-four hours without danger, but they should be carefully taken out at the end of that time and the nasal cavities carefully cleansed with a solution of glycothymoline, the tubes left out for three hours and then replaced. After this they should be removed every day, the nares cleansed and replaced in from three to six hours. After the second week they may be left out half of the time if care is taken not to injure the nose, and only worn at night. It is not well to let the patient discard the wearing of them until six weeks have elapsed, for if the septum is not very firm when they are left off there is danger of deflection following.

In syphilitic conditions of the nose, causing obstruction, cleanliness and attention to the general systemic conditions are the essential features. Kali iod. s. s., or Mercauro, are to be always thought of. I have known Mercauro to act beautifully in a case of tertiary syphilis where the saturated solution of Kali iod. had been tried with no effect whatever.

Tuberculous ulcers should be anæsthetized with Cocaine, made clean and then curetted with a Grunwald curette. Applications of the Calendula mixture can be applied daily, or, as some prefer, Iodoform or Aristol. The general health must be carefully attended to and the proper food and remedy chosen. *Arsenicum iod.* 2x, a tablet every two hours, is often the best remedy.

Fibromata and Lymphomata are best removed with the cold wire snare or the galvano-cautery snare. If extremely large a resection of the superior maxilla may be resorted to.

Angiomata should always be removed with the galvano-cautery loop to avoid hæmorrhage. Osteomata call for the chisel, trephine or gouge, and must be done under general anæsthesia. The malignant growths must be removed early if recurrence is to be avoided, and the operation should be made as radical as possible, as in removal of cancer elsewhere all glands and fat should be removed far into a healthy tissue if a permanent cure is to be hoped for.

Foreign bodies in the nose often go for a long time unrecognized. When located, the naris containing it should be cocainized and a stout, blunt probe, bent about one-quarter of an inch from the end at a right angle and then introduced over the body to engage it, so that it may be withdrawn without pressing it upward.

Once engaged with the probe it is usually quickly removed, but it may be necessary to use in some cases a pair of forceps of some kind, and those having good, firm jaws with serrated edges are to be preferred. Rhinoliths are to be removed in the same manner. Adhesions of the soft palate to the posterior pharyngeal wall are very difficult to remedy because of the tendency to re-adhere.

A method which may give the best results is to place the patient under a general anæsthetic, dissect the soft palate away from the pharyngeal wall, and then with a running suture of catgut unite the edges of the mucous membrane of the palate. Even this will not be successful if great care is not used to prevent contact for the first twelve hours.

For good results in any or all of the operations for the correction of chronic nasal obstruction, aseptic precautions, perfect technique and scrupulous attention to the keeping of the parts clean must be a constant thought.

DEFLECTIONS AND DEFORMITIES OF THE SEPTUM.

BY C. E. TEETS, M. D.,

New York.

THAT operations for correcting deflections and deformities of the septum have in some cases been unsatisfactory is clearly proven by the numerous methods which have been devised for restoring it to its normal position. MacDonald, writing on this subject, says: If we consider the fact that a curved line is necessarily longer than a straight one lying between the same limits, and that these limits in the case of the septum are fixed, it is obvious that any attempt to rectify such curvature by forcible straightening is mathematically absurd, and that the employment of forceps and plugs for this purpose must be useless. Since this article was written many new methods have been devised for the restoration of a deflected septum.

In 1886 Bosworth read a paper before the Academy of Medicine on "Deformities of the Septum," in which he advocated the complete removal of the projecting portion by means of a saw; he admits, however, that it left in the majority of cases a large perforation, which was objectionable. In favor of this method of correcting the deformity he says there is something to be said. The operation can be accomplished at an office sitting; it does not involve confinement to the house or bed, and does not require the insertion of plugs, except during the first twenty-four hours, to control the hæmorrhage. This is a method which has been practiced recently by others for correcting deformities of the septum. Dr. Dench, of New York, within the last year, employed this method in one case I know of, leaving a large perforation. Perforations will sometimes occur with any operation upon the septum and cannot always be avoided. It is not uncommon in syphilitic patients to find a large perforation or complete destruction of the bony septum, and yet the patient to all appearances suffers no inconvenience. Then what are the objections to a perforation of the septum if it does not involve too much of the cartilaginous portions? I leave this for the members to answer.

Steele's modification of Blandin's punch, which makes stellate incisions through the septum so as to destroy the resiliency of the carti-

lege before straightening, I have used many times, but it has been laid aside because it did not give satisfactory results. Ingalls's method, in which after dissecting up the mucous membrane the projecting portion is removed with a knife and the parts refitted, unfortunately is only available where there is only slight anterior deflection.

The Gleason operation is a simple method for correcting deflections of the septum and often gives very satisfactory results. It is, however, only adapted for vertical deviations of the cartilaginous septum and not applicable to those cases we so often meet, in which there is a uniform bulging to one side without any distinct ridge. The technic of the Gleason operation is as follows:

After cocainizing the parts to be operated upon, a saw is introduced along the floor of the nose beneath the deviation. The sawing should be done in a horizontal direction until it has penetrated deeply into the tissue; the direction of the sawing is then changed to a nearly vertical direction and carried upward until it has passed that portion of the septum which is deflected. This leaves a U-shaped incision about the deviated area, except above, and the flap so formed is pushed through the hole in the septum that it covered. It is not always necessary to use a splint to hold the septum in its new position, and frequently the result is better than when the tube is used.

Credit has been given Dr. Asch as being the first to recognize that the septum could be cut without any loss of tissue, but this same method was practiced as early as 1870, twelve years before Asch claims he corrected deformities of the septum by this means. Asch has devised a set of instruments which no doubt simplifies the operation, and as this method does not require the skill that only long experience in rhinological manipulations can alone give it has become quite popular. It is open, however, to some objections; it is not possible always with these large scissors to see what portion of the septum they are cutting through, and frequently instead of cutting through the ridges or angles it cuts below or above. Furthermore, fracture of both the middle and inferior turbinals, with adhesions of the lower turbinal to the floor of the nose, have been reported.

Asch, in his essay on deflections of the nasal septum, states that this operation is meant for deviations of the cartilaginous septum and not deviations of either the vomer or the ethmoid. The technic of the Asch operation is so well known that it is hardly necessary to describe it. The instruments required for the operation consist of powerful cutting scissors, one pair being straight, the other made with the blade bent

at right angle for use in deviations requiring an incision running downwards. The scissors has one blade thick and blunt for introduction into the obstructed side, while the shanks are curved outward, so as to admit of closing without interfering with the columnar. There is also a curved gauge for breaking up adhesions that may exist between the septum and the turbinal, and a pair of stout compressing forceps with parallel blades.

Emil Mayer, in his paper on deviations of the nasal septum, does not advance any new ideas in the technic of the Asch operation, but has no doubt made some necessary changes in the after-treatment. Finding that the pressure from the rounded Asch tubes was not well-dispersed over the septum, he had made a tube, which was more oval, so as to give uniform pressure upon the septum. There has been one operation described which I have not tried, as it did not seem practical; that consists in making no incisions, but with narrow forceps forcing or working the redundant tissue down to the bottom of the septum, and holding it in place with splints. After the septum had become firm the redundant tissue at the bottom was removed with saw or trephine. The most difficult part of any method is to destroy the rubber resiliency of the cartilaginous septum, and I do not believe it possible to straighten the septum in this way.

The method devised by Beaman Douglass for the restoration of a deflected nasal septum seems to me to be the most practical of any of those previously described. One important point in the operation is, first, the removal of septal thickenings, such as exostosis and ecchondrosis, together with the removal of any pathological condition of the turbinated tissue on the concave side. These excrescences are removed by means of the saw, trephine or cutting forceps three weeks prior to the operation for straightening. The technic for the Douglass method for straightening the septum is as follows: Before the patient is etherized the nasal passages are douched with a small quantity of peroxide of hydrogen or borolyptol. The patient having been etherized, the finger, well-oiled, is introduced into the nares and a careful examination made so as to determine where the septum has been previously bent or where fracture has taken place. He believes it important that the finger should discover, not only the ridges which may exist, but whether the triangular cartilage joins the superior maxillary ridge or whether the cartilage has been fractured or displaced from the ridge. Having determined the relation of the angles of deflection to each other, he then introduced a knife, called the spear knife, which is a short, sharp-

pointed blade attached to the shank at right angles; with this knife he pierces the septum at the posterior point of the deflection and feels for the point of the knife with the finger which is in the free side. An incision is made about three-fourths of an inch long, so as to allow the introduction of a blunt-pointed knife, whose blade is attached to the shank in the same manner as the spear-pointed knife. This second knife is introduced on the obstructed side and into the incision made by the spear knife. With the finger acting as a guide, the knife is drawn forward with a slight sawing motion along the summit of the ridge until it reaches a point, anterior, which is not deflected. If the examining finger discovers other ridges the bistoury is again introduced and these ridges incised in any direction they may extend. In this manner the septal deviation is divided into as many parts as there are ridges.

If the deflection at the floor of the nose consists of a displacement of both the bony ridge and cartilage, an attempt is made to break the bone free from its improper attachments by the forceps. In most cases, however, it is the cartilage which has slipped from its articulation and obstructs near the floor of the nose. This is treated by introducing the knife at the junction of the cartilage with the vomer, and drawing it forward horizontally to the epithelial border. The next step is to introduce the blades of the forceps on either side of the septum, and with a rocking or rolling motion forcibly twist the septum until all adhesions or elastic bands have been destroyed and the cartilaginous portion freely movable. Then the finger is introduced and the septum bent away from the side which has been obstructed; this causes an overlapping on the free side of the cut edges and must be done before the splints are introduced into each nostril, the larger one being placed in the previously obstructed side so as to exert pressure enough to force the septum a line past the perpendicular.

Douglass believes that success will depend largely upon the after-treatment; the patient should be kept in bed twenty-four hours and the splint not removed for forty-eight hours, unless there should be severe pain and swelling of the nose. The nose should be irrigated twice a day for the first forty-eight hours with some antiseptic solution. At the end of forty-eight hours both splints are removed, the nasal passages carefully cleansed and the splints, well-oiled, reintroduced. After four days the splint on the unobstructed side can be left out, one splint being worn in the formerly obstructed side to keep the septum in its new position. This splint is removed each day for antiseptic irriga-

tion of the nose, and at the end of three weeks it is removed during the day, but worn for two weeks longer at night only.

Jackson, of Pittsburg, believes that there is one important point which is frequently overlooked, that is, the pathological changes in the turbinal tissue on the unobstructed side. He contends that every operation for deviation should be preceeded with the removal of the inferior turbinal and a portion of the middle if hypertrophied. He further states that if the turbinal operation be sufficiently radical, there will be no need of splints or packing to keep the septum in its new position. Thirty consecutive cases operated by Dr. Jackson by this method have been perfectly successful without any support whatever, because the only thing that could displace the replaced septa were eliminated when the preceding radical turbinotomies were done.

I have employed this method a number of times to straighten the septum, but have not been so fortunate as Dr. Jackson in retaining the septum in its normal position without some support. I agree with Dr. Jackson that after operations upon the septum there is considerable swelling of the turbinated bodies in the unobstructed side, and that this often prevents the septum from retaining its new position. As this swelling occurs more frequently at night, it is not surprising that it is frequently overlooked. John B. Roberts's operation does not differ materially from those previously described, except in the method of supporting the septum. He makes an incision at the most prominent portion of the deviation and then overcomes the resiliency of the septum by numerous incisions with the stellate punch. Any horizontal bony edge that may remain at the bottom he cuts away with the chisel or saw; he then forces the septum into the normal position and holds it there by introducing a steel pin into the more open nostril, passing it through the anterior portion of the septum and burying the point in the tissues of the posterior part of the septum on the formerly occluded side. A second pin is often introduced from the external surface of the nose just below the nasal bones and the point buried into the lower edge of the septum.

A great variety of methods have been proposed for correcting deformities of the septum, but nearly all of these are adapted only to the cartilaginous portion. They fail to correct the deflection at the anterior osseous portion of the septum with which the deflection of the cartilaginous portion is almost invariably associated. Dr. Roe, of Rochester, has called attention to the fact that the posterior portion of the bony septum is rarely deflected, but generally that there is more or less de-

flection of the anterior portion associated with the deflection of the cartilaginous portion, and that in order to bring the septum into a straight line it is important that a change in the direction of the anterior osseous portion be affected. If this is not done it will be difficult to overcome the elasticity of that part of the cartilage joining on to the osseous septum. Roe, recognizing the difficulty of overcoming the resistance at this point, devised a pair of forceps for fracturing the anterior portion of the vomer and perpendicular plate of the ethmoid. The Roe forceps are made in different sizes; one blade is in the form of a ring, the other straight and fitting into it, and can be so adjusted as to produce any amount of fracture desired. The other points in the technic of the Roe operation do not differ materially from those previously described.

Stephen Lutz claims that it is easier to break the septum up thoroughly before cutting than after cutting; he first gets rid of all spurs or ridges by dissecting up the mucous membrane, turning the flap back and removing them with a saw or spoke-shave. Two weeks later the septum is straightened by grasping it well over the deflected portion, and with an extreme rocking motion breaking it up; the use of the splints, he says, may or may not be needed. Where there is extreme deflection of the septum I do not believe it possible to operate successfully by this method.

In the past sixteen years I have attempted a number of times to restore a deflected septum to its normal position. I have made use of the different methods that have been described, but have not always been satisfied with the results. For over a year I have been following a method which is applicable to a majority of deflections. I do not claim that it is new, but I believe it embraces the best features of those methods which have been previously described. Three weeks prior to straightening the septum, I remove a portion of the inferior turbinal from the unobstructed side and also all ridges, spurs or thickenings upon the septum on the unobstructed side.

The technique for straightening the septum is as follows: The nasal passages are first cleansed with some antiseptic solution, then a ten per cent. solution of Cocaine and Adrenalin chloride is applied to both sides of the septum. Satisfied that the field of operation is thoroughly cocainized, I introduce the Douglass spear-pointed knife and make a slit in the septal cartilage at the extreme end of the deflection large enough to admit of the probe-pointed knife. This probe-pointed knife is then introduced and drawn forward with a slight sawing motion along the summit of the ridge until it reaches a point, anterior, which

is not deflected. If other ridges are found joining the main deflection the bistoury is again introduced and these ridges incised in any direction they may extend. When the bony portion of the septum is deflected a small saw is introduced and the septum divided along the summit of the ridge to a point beyond the deflection. To overcome the elasticity of the cartilage, a horizontal incision is made along the superior and inferior portion. This incision should extend half way through the cartilage or deep enough to partially detach the cartilage, care being taken however to leave the mucous membrane on the opposite side intact. When all this has been accomplished the patient is then anæsthetized, and with the Roe forceps the septum is fractured. The finger, well-oiled, is then introduced and the septum moulded into the desired shape and position. Sometimes I introduce a pair of flat-bladed forceps, one blade in each nostril, to place the septum in position. The parts are then thoroughly cleansed with Pyrozone and a cork splint introduced in each side; the larger one being placed on the side that was previously obstructed. At the end of forty-eight hours the splint on the unobstructed side is removed and this side carefully cleansed with Pyrozone. The splint in the previously obstructed side is allowed to remain for six days, the opposite passage being irrigated every twenty-four hours. I have not found it necessary to remove the splints every forty-eight hours, as advised by some operators, as there was no odor, pain or rise in temperature in the cases operated by this method.

The points in the operation which I wish to emphasize are that deflections of the septum demanding surgical interference cannot be corrected without making incisions through the cartilage, and that these incisions can be more accurately made under Cocaine and Adrenalin than a general anæsthetic; furthermore, that if the septum is thoroughly fractured it needs some support until it has become firm in its new position.

DISCUSSION.

Geo. H. Quay, M. D.: In discussing treatment of deflection of the nasal septum we will divide the subject under two heads: Deflection of the septum without thickening, and deflection with thickening.

I have for some time practiced with excellent results the method advocated by Jackson of first reducing the lower and at times middle turbinal in the concave side. In fact, I find that in a great majority of cases this is necessary if a good result is to be expected.

In my experience improving deflection without thickening is limited to two, or to a combination of two operations, namely, anæsthetize the patient, then by crushing forceps thoroughly fracture by crushing in several places the cartilaginous septum, then press the fragments back

to the median line, make sure that they over-ride each other, then plug both nostrils solid; a rubber or metal tube is not necessary to breathe through. Let the patient use his mouth for that purpose. The tampons are to be removed every day or two for the first two weeks.

In the course of four weeks the parts should be healed, then trim with knife, scissors or saw the irregularities that may be present as the result of the fragments overlapping.

The other operation I advocate in this form of deflection is to perforate the septum, providing the deflection is principally posterior to the anterior septal artery. Make the opening as nearly circular as possible, use a bland healing cerate or dusting powder on the cut edges. There is ordinarily no trouble in healing.

In deflections accompanied by spurs, ridges or thickening of the septum, when possible, always first remove such obstructions. After their removal it is frequently unnecessary to further operate on the septum; but if it does become necessary, then I treat the same as first described for deflection without thickening.

Let us bear in mind the object to be obtained is to give the patient sufficient breathing space and to remove if present any cause of reflex due to obstruction or pressure. I believe there has been a great deal written and said on this subject that is impractical, mere glittering generalities. The Asch method, with its perforated tubes, I have tried and found wanting. The latest, advocated by Douglass, I have not tried, so cannot speak from actual experience. It may be practical for anterior deflections. I doubt if it be of any benefit if the deflection is located well back, for the reason that the operator cannot get his finger back far enough to be of service without injuring the integrity of the alæ nasi. The method advocated by Ingalls and others, consisting of incising and dissecting up the mucous membrane, then removing a portion of the offending cartilage, sounds catchy. But in very few cases is it of any particular use, as more can be accomplished by amputating membrane and cartilage together, then dress aseptically, and new mucous membrane will quickly reform.

A. Worrall Palmer, M. D.: This paper has been very instructive to me; it is of great interest to hear just how another man does his work. I aim at the same objective points and obtain the same results without the use of the Roe instruments. I think Dr. Teets did not mention the Douglass operation. This is really the only rational procedure of suiting the technique of the operation to the individual needs of the special case in contra-distinction to the unscientific routine punching of the Asch operation. It was first thoroughly described by Dr. Douglass, although probably performed by many rhinologists, as well as myself, before such publication. It consists in incising the septum from the convex side thereof in most prominent points in a *diagonal direction* to the surface—not at right angle—and to and not through the mucosa of the concave side; best ascertained by making incisions against the little finger introduced in the concave side. If there is much redundant

tissue it may be excised. This manoeuvre obtains better co-operation of edges and less thickness of septum following operation.

Seldom is the cartilaginous portion of septum alone deflected; usually the anterior portion of the vomer, which is below the cartilage, is also. Therefore, I usually make a horizontal incision at base of this portion of vomer with Kyle's septal saw to weaken its resiliency.

G. B. Rice, M. D.: There are some points about this operation which need to be emphasized; first, the proper preparation of the patient by thorough cleanliness of the parts, carried on for some weeks before the operation, by removal of all hypertrophies of the turbinated bodies, and also by the removal of any ridges that may have formed on the unobstructed side of the nose. I have used a combination of the Douglass operation with the Roe method, and the results have been more satisfactory than with either alone. Roe says that it can be made almost an aseptic operation. The parts can be cleansed thoroughly and then packed with borated cotton or gauze until just before the operation. After the parts have been restored to their normal position the side that was obstructed is plugged with borated gauze, which is allowed to remain for forty-eight hours. At the expiration of that time the tissues will frequently be found to have so glued together as to retain their position without any further support. Sometimes they will require a second application of the gauze. I see no reason why we should plug the nose for three or four weeks, while there are many reasons against that procedure.

C. H. Rust, M. D.: The past winter I had the pleasure of seeing Dr. Teets operate upon the septum by the Roe method, and it seemed a very rational surgical procedure. It is the thorough breaking up of the cartilaginous septum that prevents any subsequent deflection after the operation.

C. E. Teets, M. D.: (The doctor used the blackboard for this talk.) I cut through the septum at this point, and here (pointing) I cut only half way through. That breaks up the resiliency of the cartilage, and when this is done thoroughly it needs something to rest against or it will deflect again, or sag to one side or the other. It is not necessary to remove the splints every day. This was clearly proven in twenty-five cases operated on within the last year, where the splints remained from five to seven days without producing any pain, swelling, discomfort or rise in temperature. They should, however, be properly shaped so as not to exert undue pressure at any one point. One young man was a blacksmith, who attended to his work every day and experienced no pain or discomfort whatever. The case that I operated on which was witnessed by Dr. Rust was done without general anæsthesia, using Cocaine locally only; I frequently do it this way. There is some pain, but many of the patients will endure it, and the nervous ones, who think they cannot, may be anæsthetized.

In regard to Dr. Garrison's paper I have found the electric headlight of great service in operating upon enlarged adenoids. It enables one to see the amount of hæmorrhage; one can see just what they are doing and thus prevent the stripping off of the mucous membrane.

THE MIDDLE MEATUS AND THE MIDDLE TURBINATE.

BY HERBERT W. HOYT, M. D.,

Rochester, N. Y.

FROM both the physiological and pathological point of view, the middle meatus with its covering, the middle turbinate, is no doubt the most important region of the nasal cavity.

Before a body of this character it would be presumptuous to take up the detailed anatomy of these parts; therefore, only a brief resume of the chief points of interest will be presented. Four or five openings leading into cavities of various sizes are usually found in the middle meatus, viz., those of the antrum, frontal sinus and anterior ethmoid cells. The mucous glands are more abundant in the membrane of the middle and upper nares than in the lower. The olfactory nerve terminals are partially distributed over the middle turbinate. Ether directly or indirectly the interior of the nose is supplied with filaments from all the cranial nerves but two, as well as from the cervical plexus and sympathetic system, and the middle meatus has a full share in this distribution. Hardly any other portion of the body can be found where such an opportunity offers for reflex nervous phenomena.

Experiments carried on by Dr. Gottfried Scheff demonstrate that "the natural current of the inhaled air is upward and backward, through the middle and superior meatuses. The removal of the middle turbinate does not change this direction."

Parker, in the Journal of Laryngology, July, 1901, gives a summary of an elaborate course of experiments in the direction of air in normal respiration, as follows: "1. During quiet inspiration in a normal nose the air traverses the middle, superior and probably the fourth meatus. 2. Inspiration is impeded by (a) spurs and deviations of the septum and enlargements of the inferior turbinate, if they project forward and upward; (b) enlargements of the middle turbinate, polypi, etc.; (c) hypertrophies and growths springing from the vault of the naso pharynx. 3. In expiration the air traverses chiefly the inferior meatus. 4. Expiration will be especially affected by (a) hypertrophy of the posterior end of the inferior turbinate; (b) hypertrophy, etc.,

causing stenosis of the inferior meatus." Thus it is seen that to render inspiration easy the middle meatus must be free.

It is a common observation that the mucous membrane over the middle turbinate is so exceedingly sensitive that sneezing, lachrymation and pain follow the touch of a probe sooner than in any other part of the nasal cavity.

With these points in mind, viz., that the middle nares is so sensitive that it is in the direct current of inspired air, and that it is the drainage ground of the principal accessory cavities of the nose, it seems imperative that it should be examined with the utmost thoroughness. Then, too, the pathological conditions found here are many.

If the middle space is not easily seen on first inspection there may be deformed septum or enlarged inferior turbinate obstructing the view. It seems to the writer unwise to spray Cocaine or Adrenalin into the nostril for the first examination. It is far better to apply only to the surface in plain view a weak solution of Cocaine on a cotton mop. In this manner, as fast as the visible parts shrink, those parts further back will be revealed and enable one to examine the conditions unchanged. Cocaine or Adrenalin sprayed into the nose will sometimes so alter the swollen membranes, polypi or hypertrophy that no pathological changes will appear, thereby causing an error in diagnosis.

After seeing the undisturbed condition of the middle turbinate, the application of Cocaine is necessary to enable one to use the smooth, flexible probe, without which a diagnosis of the state of the middle meatus is impossible. With it the consistency of the turbinate can be determined, a polypus can be brought into view, and a drop of pus can usually be traced to its origin in some accessory cavity.

The middle turbinate is, in the writer's opinion, more often at fault than is usually supposed. If the space between it and the septum is not quite free, or if there is not room to pass a small probe between it and the outer wall of the middle meatus, it is causing obstruction. In a large number of such cases the trouble is with the anterior end of the middle turbinate. This may be a compact mass of bone and sub-mucous tissue, it may be a polypoid thickening of the mucous membrane, or it may be a bony cyst, which is sometimes connected with one of the ethmoid cells. In any of the above conditions its removal by means of forceps or snare is good treatment. This will give better drainage to the sinuses, better ventilation to the inspiratory breathing space, and remove that tendency to pressure on taking cold. If there is suppuration of the antrum, or suspected obstruction to the ostium

maxillare or frontalis, the removal of the anterior tip of the middle turbinate is the first requisite. Many times polypi, which are nearly always found in the middle meatus or on the middle turbinate, cannot be removed thoroughly without excising some of the middle spongy bone.

In the writer's hands, hay fever has yielded more readily to work in the middle meatus than to any other surgical procedure. At times, after the grip, or a very hard head-cold, the mucous membrane of the middle turbinate is so excoriated that synechia will form between it and the septum or inferior turbinate. These are easily overlooked, but are very sensitive and productive of more marked reflexes than when nearer the floor of the nose. Numerous cases are cited of muscular asthenopia, caused by pressure of enlarged middle turbinates, and cured by removal of the overgrown tissue.

(Hopple, The Medical News, July 27, 1901.)

(Poole, Medical News, Aug. 13, 1901.)

(Sattler, Journal of the American Med. Assn., May 18, 1901.)

To illustrate the marked reflex action of irritation of the middle meatus and turbinate, four cases will be cited. Three of the four were not aware of any particular nasal trouble.

Case One.—Mrs. H., aged fifty, had hay fever and asthma of sixteen years' standing; attacks not confined merely to the early fall; had a disagreeable discharge from the right nostril, and at times a dull, heavy pain in the right cheek. Examination revealed the right middle turbinate thick and polypoid, bathed in a muco-purulent secretion. Upon removal of this polypoid mass with a snare the ostium maxillare was seen to be filled with polypi and oozed an offensive pus. After the extraction of two diseased molars on that side the antrum was opened through the canine fossa, curetted of a large mass of polypoid tissue and drained. After two months the secretions ceased, the opening into the antrum closed, and there has been no return of the old trouble, though two years have passed.

Case Two.—Mrs. G., aged twenty-five, complained of severe, nearly constant supra-orbital headache; had some operation on her nose seven years before, which hurt her so much that she did not have it completed. The headache dated from that time. On examination nothing could be seen, until the inferior turbinate was shrunken; then three small synechia were seen, binding the left middle turbinate to the septum, and one similarly situated on the right. After these were removed and healed the headache ceased.

Case Three.—Mr. M., aged seventy, for seven years had suffered intensely from a left-sided *tic douloureux*. All his teeth had been extracted, the face blistered and quantities of medicine taken to no purpose. He had been nearly persuaded to undergo the removal of the Gasserian ganglion when he came under the writer's care. The left

middle turbinate was found to be very large and boggy, surrounded by polypi, and a few polypi were seen in the right middle meatus. The anterior end of the left middle turbinate and the polypi were removed, followed by amelioration of the pain. A few more polypi appeared shortly after, with some return of pain; but after their complete removal the pain ceased, the patient gained twenty pounds in weight and felt that life was not such a burden after all.

Case Four.—Mr. M., aged twenty-six, student, for years had left-sided headache, especially when studying. Repeated examination of the eyes and application of glasses failed to relieve or reveal the cause of trouble. An examination of the nose brought to view a very sharp, bony spur on the left septum, pressing firmly into the middle turbinate. The pressure of the probe on the spur sent severe pain to the site of headache. After removal of the spur the headache ceased and had not returned two years later, when the patient left the city.

DISCUSSION.

Dr. O. L. Smith: For some considerable time we have believed the real importance of this particular turbinate to be unappreciated, and we wish to express to the essayist our congratulations for the impetus which such a suggestive clinical article always assures.

The horizontal position of the middle turbinate constantly subjects that body to whatever irritation the inspiratory air current may supply, which fact, coupled with the double nerve supply furnished, and the morphological individuality already mentioned by the essayist, fully justifies the large number of reflexes emanating therefrom.

The modus operandi of the initial nasal examination is specially pertinent, and quite worthy of commendation and emulation.

There will not infrequently be found ante-dating an attack of hay fever a pathological hyper-æsthesia of the middle turbinate above the "agger nasi," treatment of which often proves practically abortive in result. The real explanation of this probably lies in the fact that the olfactory neural distribution terminates at the "agger nasi," which in reality constitutes the "party line" between the olfactory and respiratory nose.

Occasionally we mistake a turbinal-septal apposition to depend upon turbinal abnormality, when in reality there exists an enlargement of the tuberculum, reduction of which terminates the local reflex irritation arising therefrom. Two patients have come under our observation, who invariably complain of a cardiac angina following astringent applications to the middle turbinate.

The ocular tissues, we believe, most frequently suffer secondarily and reflexly from abnormalities of the middle turbinate.

It should be remembered that secondary congestion of this turbinate from renal, cardiac, hepatic and sexual irregularities is neither infrequent nor unproductive of annoying symptoms.

Fleiss, of Berlin, reports the cure of some dozen cases of intractable

dysmenorrhœa, cured by the correction of nasal irregularities and local nasal treatments. We are unable to state, however, how many were dependent upon involvement of the middle turbinate. We recall two cases of ethmoidal empyema, which were drained by reduction of the swollen middle turbinate, this freeing the patients of some very disagreeable *mental* symptoms. The first patient admitted the presence of a slight discharge from the left naris during the day, which ceased, however, upon retiring. Within an hour after going to bed there would appear such mental aberration that for two weeks the attending physician had resorted to large doses of morphine. The second patient was shortly and completely relieved of a headache of thirty days' duration, and within a week the very marked aprosexia had practically disappeared.

E. D. Brooks, M. D.: It is difficult to remove a piece of the middle turbinate, just the size and shape that you desire. Does any one know a better method than the ordinary one?

H. W. Hoyt, M. D.: My usual method is to take a strong pair of angular scissors and snip the attachment of the turbinate so as to make a little sulcus for the wire. If necessary, I use a saw instead of the scissors.

ETHMOIDITIS—THREE CASES.

BY FRANK B. SEITZ, M. D.,

Buffalo, N. Y.

THE object of this paper is to present three cases of ethmoiditis that had few or no nose symptoms, but such decided and distressing eye or throat symptoms that neither patients nor physicians consulted suspected the existence of any trouble in the nose.

Case One.—Mr. M., age forty, book-keeper, stated he had been to a number of oculists, complaining of an irritable, sometimes painful or easily tired, right eye; could hardly perform his work; was compelled to give up evening reading; had frequently changed glasses, of which he had a list. They were crossed Cyl., simple Cyl. and compound plus sphero. Cyl., with varying axis. There were no signs of glaucoma, both eyes normal in appearance, V. $^{20}/_{20}$, with and without glasses. He wore R. + 1 x 90 L. + 75 x 90; orthophoria existed in the muscles. Under scopolamine V. $^{20}/_{70}$ + 50^{s} + 75^{c} x 90 $^{20}/_{20}$ O. U. These were prescribed without relief.

Now I concluded the eyes were not the cause of trouble and decided to look elsewhere. He had not made a single complaint about the nose. He breathed well, at least he thought so until I enabled him to breathe 50% better. After complete shrinking of the nasal mucous membrane a deposit of pus was revealed in the R. superior meatus, thus establishing the diagnosis of empyema, accounting for the symptoms in his right eye.

Case Two.—Mrs. H., age fifty-five, consulted me for an œdema calidum of the R. lower lid, which had occurred frequently during the past year. She had been treated by a general practitioner with Iodine and a pressure bandage. She made no complaint about the nose; was able to breathe well; had very little discharge, and except for the occasional swelling felt generally well.

The eye-ball was healthy in appearance. There was no hordeolum chalzion nor blenorrhœa to produce the trouble. On examining the nose found the superior and middle meatus full of polypi bathed in pus, establishing the diagnosis of empyæma. The lower meatus was broad and free, allowing her to breathe freely, and no doubt the current of air dried the secretions so she scarcely noticed them.

Case Three.—Mr. S., age thirty, book-keeper, had been to a general practitioner and to a throat specialist for frequent hawking, dropping in the throat, bad taste, loss of appetite and dyspeptic symptoms. In this case the throat and stomach symptoms were the most prominent;

had no trouble in the nose. He gave but one symptom of empyæma. He was aware of a foul smell. In ozæna the patient is not aware, but the observer is, of a foul smell from the patient's nose. In empyæma this is reversed.

This is accounted for by the fact that in ozæna the destruction occurs in the nasal cavity, often involving the terminal filaments of the olfactory nerve. While in empyæma the destruction takes place in the cells and not in the nasal cavity.

His nose on first examination seemed normal, the color of the mucous membrane was good, there was free space between turbinals and between turbinals septum; but after shrinking a tiny stream of glistening white pus was seen passing down the posterior end of the middle turbinal from the superior meatus. This pus passing down the pharynx on too the tonsils and tongue, being frequently swallowed, would account for all of his symptoms.

DIAGNOSIS. The common symptoms of ethmoiditis as given by different authorities are muco-purulent discharge through the rhinopharynx (this occurred markedly in case 3), with dull, deep-seated pain around the orbit and frontal region (this occurred in case 1), or in the temporal or occipital region (these usually indicate the sphenoidal sinus). At times the orbital plate at the inner canthus gives way, allowing secretions to escape into the cellular tissue of the orbit or lid. (This occurred in case 2.) This symptom indicates empyæma of the anterior ethmoid cells.

The diagnosis of empyæma in each case was made on the objective symptom of pus, the subjective symptoms being contradictory and misleading. The exact location of the source of this pus is necessary to determine the cavity affected. In two cases this was confined to the superior meatus. Pus in the superior meatus means one of three things—empyæma of the posterior ethmoid cells, or of the sphenoid sinus, or subperiosteal bone disease. The latter is readily determined by a probe and the sense of touch. In both cases the mucous membrane was intact. It is extremely difficult to distinguish between sphenoidal and posterior ethmoidal empyæma. On general principles it is well to treat as if both were affected, as they frequently are. The posterior rhinoscopic mirror and the irrigation tube are valuable assistants in locating the source of pus.

In case 2 the pus and polypi filled the superior and middle meatus. After clearing things up pus was seen emerging from both superior and middle meatus. Pus emerging below the middle turbinal at the hiatus means empyæma of the anterior ethmoid cells, or of the frontal sinus, or of the antrum.

In this case the œdema of the lid showed the anterior ethmoid cells were the seat of the trouble. It also coming from the superior meatus showed all the ethmoid cells were involved.

TREATMENT. The general principle of treatment applicable to all empyæma is free drainage and frequent flushing. Free drainage is obtianed with punch, snare and cautery; the flushing with some antiseptic alkaline fluid, like Dobel's, Seilers's Glyco-Thymol or Alka Typol, adding Formaline or Peroxide, or both.

An effective method of flushing the sinuses and cells is to use the rubber bulb and tube found on every hand atomizer, inserting into the tube an S-shaped sphenoidal irrigation tube. Filling the bulb with fluid, the tip is held and guided with thumb and forefinger, while the bulb is held and compressed in the palm of the hand. This gives control of more fluid, greater force and more accurate delivery than with the Davidson spray.

A few words as to internal medication. Cases 1 and 2 received none. Case 1 had eye symptoms, while the trouble was in the nose, so I knew they were reflex and could be only palliated. Case 2 was so clearly a case for local surgery that no remedy was given. Case 3 received Hydrastis 3x for the throat symptoms, but these were secondary to ethmoiditis.

In conclusion, I will say in those cases where you have carefully refracted the eyes and the patient gets no relief; when a case calls for frequent change of glasses, or an unsuccessfully treated case comes from another physician, or in other generally unsatisfactory cases of eye. or throat trouble, thoroughly shrink the nasal mucous membrane and perhaps you will find some pus, the finding of which will do the patient and yourself much good, as illustrated by these three cases.

SOME OCULAR COMPLICATIONS OF SINUSITIS TREATED AND CURED WITHOUT SURGICAL INTERVENTION.

BY DR. DANIEL PARENTEAU, M. D.,

Paris, France.

Translated by Wm. S. Pearsall, Ph. D., M. D., New York.

IN the language of Esop, specialization in medicine is at the same time a very good and a very bad thing, but it is rare that the good does not exceed the bad, and whatever may be the inconvenience of a relection, often too exclusive, it may be said in a general way that whatever serious progress is realized in pathology is most often due to the concentration and profound studies of specialists, studies whose effects make themselves felt, not only in their proper domain, but also in the connecting branches.

Thus it is that the work undertaken by aurists in facial sinusitis has rapidly brought about an interchange of ideas between them and the ophthalmologists, and a number of ocular affections, whose etiology had remained obscure, have been made clear, as by a miracle, and have admitted of treatment, which, though not properly speaking within the territory of the eye, has nevertheless produced rapid amelioration and often cures in affections of this organ.

The question of sinusitis as a primary cause of ocular and orbital changes was shown clearly in an interesting communication by Panas in 1890. But since this time the road has broadened and each day adds some new discovery.

I make no pretention of adding new facts to those already known. The observations which I intend to speak of are composed of cases that are today almost classic. But, while the *Societe Francaise d'Ophthalmologie,* of which I am a member, has occupied itself with the question from a point of view, if not exclusively, at least very largely surgical, I would show by some examples, unhappily too few in number, some of the resources of homœopathic medical treatment in cases of facial sinusitis and their ocular complications.

This therapeutic study, which would not be understood by our French allopathic colleagues, will, I am certain, be appreciated as it deserves

by the physicians of the other side of the Atlantic, happy practitioners to whom tolerance and liberty of medical conscience permits the production of their works before their confreres of the opposite school without having the fear of being treated as fools or charlatans.

Do not think that I am a systematic adversary of surgery. Such a position on my part would be simply absurd. I recognize the fact that there are cases of empyæma so extensive, or with so much breaking down, that it is altogether necessary to evacuate the pus by an operation. But outside these extreme cases there are others, and such cases I have in view in this work, cases arising from infection, propagated inflammation, or nervous reflex action from ocular accidents, in which medical intervention is sufficient to bring back a condition of health.

Or, as I recently said in the toast that I gave as president of the Societe Homœopathique d'France, to the memory of our master, Samuel Hahnemann, "The preservation as complete as possible of this which constitutes our charnal envelope ought to be the primary and constant aim of all physicians in general and of oculists in particular, since they take care of an organ which is held, so to speak, as the apple of our eyes."

A reaction seems to be taking place against surgical intervention where the necessity is not very apparent.

Dr. Berson, at the Congress of 1902, related, among other cases which he had seen, a case of subacute maxillary sinusitis, occurring in a man of letters, which caused for many years violent lachrymation. The patient refused an operation for sinusitis by a rhinologist, and the sinusitis and lachrymation were spontaneously cured, little by little, as may be seen in some cases, and without treatment.

I have also seen such cases, unilateral neuralgias of the trigeminus with unilateral asthenopia, attributable to latent frontal sinusitis and lasting for years.

Let us add that we proceed to operation too quickly, and the unsuccessful operations are already frequent enough, since the case published by Panas, in 1898, when the patient died suddenly, although he had been operated several weeks, and was apparently in good health.

So much said, I add, without further tarrying, the following series of operations occurring in my practice during the past few years:

Case One.—On the 5th of May, 1901, Mrs. S., thirty-one years of age, was brought to me by her husband for an irido-choroiditis of the left eye, dating back three months, and which had already been treated by several oculists.

The affection is either rheumatic or specific, and as the patient's previous history is clearly arthritic, I am inclined to believe that we have to deal with an ocular complication of rheumatism.

This seems the more probable since the ocular symptoms submit at times to other variations which appear to be dependent upon climatic changes.

Oblique illumination shows the anterior chamber to be clear and the pupillary opening free from all exudate.

The pupil, a little sluggish to luminous and accommodative excitations, dilates easily and completely under the influence of Atropine; but the tissue is changed, thickened. The color of the iris (light blue in the healthy eye) is greenish in the diseased eye. With the ophthalmoscope is seen a diffuse and generalized trouble of the vitreous, so pronounced that the examination of the deep membranes is hardly possible. There do not seem to have been grave changes, such as papillary atrophy or hæmorrhage, in the retina.

The tension to the globe is a little below the normal. The acuteness of vision is $^1/_{120}$, while in the right it is $^2/_3$.

There are no opacities of the crystalline.

I prescribed *Hydrarg. cyan.* 6c and *Lachesis* 12 in alternation for eight days.

On the 12th of May the patient returned. She is no better and has neuralgic pains, which she attributes to her teeth, and which radiate from the jaw to the eye, which is hyperæmic. It is sensitive to light and there is much lachrymation.

In examining the patient more carefully I remark that the left cheek is slightly swollen. Pressure over the canine fossa notably increases the pain. The teeth all appear absolutely sound.

I then ask the patient if, when she bends her head down, there is any abnormal increase of fluid from the nose. The answer is affirmative, and I make myself sure of the fact. The liquid secreted is clear, yellow, non-purulent, slightly sticky and stiffens the handkerchief like starch. This secretion has an insipid odor, but not nauseating, in spite of which the patient has the impression of a very disagreeable subjective odor.

The idea of a sinusitis is strengthened, and I request my patient to go and see a specialist and report to me his diagnosis. At the clinic of Luc, where she presented herself, intra-buccal electric illumination showed a maxillary sinusitis on the left side in process of evolution.

An operation was proposed, which was refused, and she returned to

me. Having given the condition of the dental system, I examine the nasal condition and find that the patient has had, at different times, very violent attacks of rhinitis with muco-purulent discharge.

There is no doubt that the sinusitis is a result of these repeated nasal attacks, and at the same time aggravated by the arthritic habit of the patient.

Under the conditions I recommend large intra-nasal lavages with the following solution:

Eucalyptus globulus (T. M.) .....gtt. xxx
Ledum palustre (T. M.) .....gtt. x
Aqua simplex .....300 gramme.

Then I give internally *Silicia* 30, alternated with *Colocynthis* 12.

In about eight days the patient returned improved, the pain in the face having diminished in a very sensible degree.

I again prescribed *Silicia* 30 and *Cedron* 6. Eight days later there was a complete cessation of pain. The condition of the eye seemed to be the same; nevertheless, the patient said her vision was a little more clear, and in fact on examination I found the visual acuteness to be $= {}^{1}/_{12}$.

I then prescribed *Silicia* 30 and *Aurum* 30 for eleven days.

When the patient returned all the nasal discharge had disappeared, the swelling and pain had ceased. As to the vision it was ${}^{1}/_{10}$, and the ophthalmoscope showed a sensible diminution of the trouble in the vitreous.

I returned to *Hydrarg. cyan.* 6 and continued it for three weeks.

Visual acuteness $= {}^{1}/_{4}$.

Same treatment for a month. S. $= {}^{1}/_{2}$.

About this time I ceased to see the patient, who was obliged to leave Paris; but I continued to have news of her, and a year after one of my patients who had seen her assured me that she was completely cured and she could see almost as well with the left eye as with the right.

Case Two.—The Count de V——, aged forty years, came to consult me November 3, 1897, about a lachrymal trouble which had made its appearance several months previous, and which alarmed him all the more in that he had already seen several oculists, both in France and abroad, and that all, after having diagnosed a commencing papillary atrophy (from different causes outside), had given a very serious prognosis.

I noted a very marked discoloration of both papillæ, especially on the right side, which was shining white.

No peripapular suffusion. The arteries seemed a little small compared to the calibre of the veins, which, however, were neither swollen nor winding. No hæmorrhage at the papillary end, nor in the peripapillary regions, which appeared perfectly healthy. All the media are healthy and transparent; no opacities in the crystalline.

The iris, normal on both sides, reacts well, both to luminous excitation and to accommodation. The cornea is also healthy; the tension normal.

The examination of refraction shows a slight hypermetropia + 0.75 D. in the left eye and + 1.25 D. in the right. Visual acuteness for distance $= {}^1/_{10}$ in the right and ${}^1/_8$ in the left.

The visual field is slightly contracted, but in a concentric fashion, and without scotoma. The perception of colors is normal, even for the green, which only seems a little more dull.

The patient assured me that until lately he had always had very clear vision, except for one year passed in Norway, where, following very severe attacks of coryza, he had a very considerable diminution of vision, which completely disappeared, little by little, after his return to France.

At present he has consulted a specialist, and is bound to be cured of his coryza.

I questioned the patient to find out if he had ever had tabes dorsalis or syphilis. After as minute and profound an examination as it was possible to make, I was forced to exclude the hypothesis of these two diseases. Moreover, the general health has always been good, and the only affection appears to have been the attacks of coryza coming on at different times and accompanied by very painful phenomena in the nasal region and often in the whole face.

In spite of the absence of symptoms of syphilis or tabes, I was tempted to give a grave prognosis, when three or four days after his first visit Mr. de V—— called me. The 7th of November he had had an attack of what he called coryza, nasal discharge, which as usual was accompanied by fever, sharp pains and swelling in the orbito-malar region. Also—a detail that had not been given before—that the patient was pursued by a nauseating odor, which manifested itself principally when bending the head forward and when blowing the nose. I asked to see his handkerchiefs, and was not at all surprised to see them almost

entirely stained with a viscid grayish-yellow liquid, which, in parts where it had dried, was surrounded by a sharply defined areola and gave to the finger the impression of being highly starched.

Of the odor complained of by the patient I could find no appreciable trace. The liquid excreted had only the slight odor of muco-purulent liquids.

I palpated the malar and sub-orbital region, which was manifestly swollen and which even on light pressure was very painful.

I immediately thought of sinusitis and accompanied the patient to my confrere, Dr. Gapen, who diagnosed a polysinusitis in the acute stage, and who proposed opening the cavities and curetting them, an operation which Mr. de V—— utterly refused in spite of my advice that it be done.

On account of his obstinacy I was forced to give up and prescribed *Silicia* 30 and *Lachesis* 12 for two days. At the same time I recommended the patient to avoid as much as possible blowing the nose hard, and to breathe through the nasal cavities. I also applied to the painful part a cataplasm of potato starch, to which was added a few drops of Hypericum T. M.

On the 10th of November Mr. de V—— returned to my office; the pain perverted, but the swelling and secretion were slightly diminished.

The condition of the eye was exactly the same.

I prescribed *Merc. corr.* 6 and *Silcia* 30 in alternation for four days, recommending to come back to see me at the end of that time.

The 15th of November the secretion had diminished considerably and the patient had no more pain. A scarcely noticeable puffiness of the affected region.

He told me that his vision seemed to him better, and I found, not without surprise, that the hypermetropia corrected, the visual acuteness had returned to $^1/_6$ in the right and almost to $^1/_3$ in the left.

With the ophthalmoscope there was no change in the color of the papillæ, which were still extremely blanched. Nevertheless the increased visual acuteness is undeniable and there is reason to hope that it will not be arrested then. In order to hasten the restoration of the nerve fibres I advised the patient to have the continuous current used. But a fervent disciple of Hahnemann, Mr. de V—— would only accept internal medication, and he had been much grieved to accept the cataplasm, which he considered a heresy.

We proceeded then to internal medication, and to increase the regenerative activity of the nerve fibres I alternated *Platina* 12 with *Calc.*

phos. 6. This was continued for a week. At this time the visual acuteness has become $^1/_3$ in the right and $^1/_2$ in the left.

The papillæ are still blanched, but the calibre of the arteries seems greater than in the beginning.

I prescribed *Aurum* 30, alternated with *Platina* 18, which was carried with much regularity for three weeks.

At this time the patient had no more nasal discharge. He suffered no more in the affected region, and two specialists, to whom, by my advice, he consulted, declared that there remained no trace of acute sinusitis.

A strange thing the papillæ remained blanched, though in a less degree than at first. The visual acuteness has returned to $^1/_2$ in the right and $^2/_3$ in the left.

At this time the patient was obliged to return to Norway, called there in the interests of his family, and I have not seen him since.

To these two cases I might, if the first person were not hateful, even in medicine, add a third, which is myself.

Suffering from sinusitis, confirmed successively by Drs. Gapin, Martin and Dantan, I had from time to time acute attacks that naturally I treated from the beginning with appropriate medication, when Mercury in some of its different forms served me generally, either alone or with *Silicia.*

In two different relapses, some years apart, the acute attack was accompanied by ocular congestion, with mucosa volitantes, trouble from bright light and pronounced photophobia.

Now, not only the ocular symptoms, but also those of sinusitis, have always, up to the present time, subsided very rapidly under homœopathic treatment, which tends to prove that attacks of sinusitis, even acute, are not always so grave as oculists and laryngologists would have us believe.

According to most of them all acute attacks of sinusitis demand surgical treatment. In numerous cases in my practice, as I said before, I have seen patients with acute sinusitis carried through without grave accidents and cured without operation.

I believe that we ought to be very careful to guard against the exaggerations of a school that thinks only of surgical intervention, even when the indications are not present; and I believe that in such cases we ought to have recourse to internal treatment, which often causes a disappearance of the symptoms, of course, keeping the patient under close surveillance.

COLDS, CAUSE, COURSE AND COMPLICATIONS.

BY ROBERT G. REED, M. D.,

Cincinnati, Ohio.

IT is at the suggestion of our president that I attempt to present to this society a paper relative to a subject with which you are all familiar. It is not with the intention of advancing any new theories or observations, but only to bring before this assembly for its consideration and discussion the subject of "Colds, Their Cause, Course and Complication."

How this term came to be applied in its generally accepted sense, or who the genius was that originated it, is unknown to me. As I have no ambition to immoralize my name by inventing a more appropriate term, I will leave it as I found it—a convenient, universal handle, by which to take hold of a number of special conditions in a general way.

A cold is an inflammation of a greater or less area of mucous membrane, which is named according to the anatomical region involved as rhinitis, pharyngitis, bronchitis, pneumonitis, etc., etc., all of which are marked in their course by certain common characteristics.

When we consider the great extent of surface over which mucous membrane is distributed in the human body the importance of this subject becomes apparent.

Perhaps no more common ailment is met in practice than colds. It is so common as to be despised by the laity, who frequently disdain the offices of the physician, and the latter often looks upon it as a necessary evil, attendant upon this earthly existence, and interests himself more in the consideration of results of the condition than the condition itself.

The location of the mucous surface most frequently attacked is that lining the upper portion of the respiratory tract, and is commonly referred to as a "Head Cold," and the extent of surface affected may vary in extent from a small portion of the nasal mucous membrane to a general involvement of all the mucous surface from the vestibule of the nose to the bifurcation of the trachea.

The physiological limit of variation in the blood supply to the mucous and sub-mucous structures under the variable atmospheric conditions

makes impossible any sharp line of demarcation between a physiological and pathological process. This gives rise to great confusion in the minds of many patients, as to what is really meant by curing a "Catarrh," which unfortunately is a name frequently applied to one stage of a cold. They often feel that they have not been cured of a rhino-pharyngitis, because at times they notice what is really a normal discharge of mucus.

The cause of colds readily resolves itself into predisposing and exciting, the most important of which is the former. This must exist in some functional derangement of the system, which has to do with the production and elimination of heat—in other words, the metabolism of the body. Hence, any derangement of the digestion or assimilation of food, any lowering of the vitality from whatever cause, whether it be from disease, over-exertion or lack of exercise, predisposes to cold, these having a direct relation to the production of body heat. On the other hand, any disorder of the heat-eliminating organs, such as the skin and lungs, readily dispose to the circulatory disturbances peculiar to inflammation of the mucous surfaces.

With any or all of the predisposing causes present in a given case the exciting causes become too numerous to mention, and the list may extend from the physical to the mental realm.

My proposition is simply this—given a case whose digestive, assimilative and eliminative functions are perfect, and it may be subjected to all the variations of temperature peculiar to the climate of New York, Chicago and Cleveland, and not take cold. And what I have said of temperature, I say of all the other exciting causes commonly mentioned in this connection.

The course of a cold may be divided into three stages, namely, inflammatory, exudative and stage of resolution. The first is marked by dryness, heat and general irritability of the mucous surface affected, together with the rise of body temperature and the general symptoms of this disorder. The exudative stage follows closely, by a profuse discharge of mucous, together with swelling and engorgement of the mucous and sub-mucous tissue, while the third is marked by the subsistence of the swelling and discharge, and the return of the tissues to their normal condition. Undoubtedly, this last stage does not always follow the second promptly, but is frequently delayed or interrupted by repeated attacks of cold, or the inability of the vascular system to regain its normal function, which gives rise to many and varied complications. The most frequent of these is that the interruption of the process in the second

stage causes it to become chronic. This at first is a simple swelling of the sub-mucous or erectile tissue (in the nose and naso-pharynx), which is commonly known as simple chronic catarrh. If this engorgement persists, sooner or later organization takes place, and there is an increase of cell elements in the sub-mucous tissue, and hypertrophy is the result. Or the nutritive process may become so impaired as to cause absorption of the cell elements, causing partial or complete loss of function in the mucous membrane.

Other complications may be enumerated, such as acute and chronic inflammation of the various sinuses, which open into upper air passages, namely, the antral, supra-orbital, ethmoidal, sphenoidal, etc., while the development of polypi, Eustachian and middle ear disease are not rare.

It is not my intention to attempt a description of these complications, nor even to mention all those on the naso-pharyngeal space, the larynx and the bronchial tubes, hoping that in a paper relative to the prevention and treatment of these conditions, and the discussion of the same, your time may be better occupied than by listening to a recitation by me of generalities with which you have long been familiar.

DISCUSSION.

E. Elmer Keeler, M. D.: Dr. Reed candidly states that he does not attempt in his brief paper to bring out any "new theories or observations," but he has done exceedingly well to so entertainingly call our attention to some of the reasons for the universal "cold habit." I quite agree with his statement that a person whose digestive, assimilative and eliminative functions are perfect will not "take cold."

I shall probably not be challenged when I make the statement that very few of our patients will be found to be in this condition. Their vitality is "below par." What can we do to increase their resistance to morbific agencies?

In a paper presented before the New York Homœopathic Medical Society in 1896 upon "The Prevention of Throat Disease," I spoke of the danger our patients encounter from an excessive amount of heat in their homes and offices during the winter months.

I said: "We should teach our patients how to warm their homes. There is generally enough heat in our houses; very few really suffering from deficient heat; the trouble usually being an over-supply and an unequal distribution. In short, our rooms are heated, not warmed.

"Then consider the exposure following the change from this superheated and dried atmosphere to the open air of winter. Any of our patients interested in horticulture would little think of removing a tropical plant from Florida to Northern Maine, expecting it to survive the change. Yet every day in winter they are subjecting themselves and their children to changes even greater.

"The nose and throat standing guard over the lungs usually suffer the results of these changes, although pulmonary inflammation may result."

We have a duty to perform to our patients not expressed by powder, pill or local treatment. If we would have our patients really "cured" we must teach them what to do in order not to have a return of the same conditions for which we were first consulted.

We may remove the result. We may then instruct our patients so that they may remove the cause.

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Ex.—exclusively.	T.—throat.
E.—eye.	G.—general practice.
Ea.—ear.	*—attended last meeting.
N.—nose.	x—no answer as to specialty.

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CONSTITUTION.

ARTICLE I.—NAME AND OBJECT.

This association shall be styled the American Homœopathic Ophthalmological, Otological and Laryngological Society, and its object the study of the eye, ear, nose and throat, with particular reference to Homœopathic therapeutics.

ARTICLE II.—MEMBERS.

The society shall be composed of those physicians who are already members, and of such others as may be hereafter chosen in conformity with the by-laws.

ARTICLE III.—QUORUM.

At any meeting of the society eleven members shall constitute a quorum.

ARTICLE IV.—OFFICERS.

The officers of the society shall be a president, two vice-presidents, a secretary, and a treasurer, who shall also constitute an executive committee of the society.

ARTICLE V.—AMENDMENTS.

This constitution may be altered or amended by a vote of two-thirds of all the members present at the regular annual meeting, provided that notices of such alteration or amendment shall have been given in writing at a previous annual meeting of the society.

BY-LAWS.

ARTICLE I.—MEETINGS.

This society shall hold at least one session in each year, at such time and place as may be determined upon.

ARTICLE II.—ELECTION OF OFFICERS.

SECTION 1. The officers shall be elected by ballot at each annual meeting of the society, and shall enter upon their respective duties immediately after the close of the annual session.

SEC. 2. The regular chosen officers of this society shall constitute an executive committee, which shall arrange the business of the session, attend to matters of business not otherwise specially provided for, and perform such other duties as may, by vote of the society, devolve upon them.

ARTICLE III.—DUTIES OF OFFICERS.

SECTION 1. The president shall preside at the meeting of the society, and perform such duties as may, by vote of the society, be devolved upon him. He shall deliver an address at the opening of each annual session, upon such subject as he may select.

SEC. 2. The vice-presidents in their order shall perform the duties of the president in his absence or disability.

SEC. 3. The secretary shall keep a record of the proceedings of the meetings, conduct the correspondence of the society, issue notice of meetings, and notify members of their election.

SEC. 4. The treasurer shall receive all money belonging to the society, shall make all disbursements under the recommendation of the president, and shall furnish at each annual meeting a written report of the condition of the finances.

ARTICLE IV.—CENSORS.

There shall be a Board of Censors, consisting of five members, who shall receive and examine the credentials of candidates for membership, and report to the society for election such as may be found properly qualified. The members of said board shall be elected by ballot at each annual session to serve for one year from the first day of January next succeeding said election.

ARTICLE V.—MEMBERSHIP.

SECTION 1. —Any regular qualified and reputable physician, endorsed by two members, may be elected to membership in this society.

SEC. 2. The admission fee of each member of the society shall be two dollars.

SEC. 3. Members shall pay annually the sum of three dollars toward defraying the expenses of the society.

SEC. 4. The election of no member shall be considered completed until he shall have paid his admission fee and annual dues; and his membership can only be continued by the annual payment of these dues, and by becoming a member of the American Institute of Homœopathy before he has been a member of this society for three years. Until his dues are paid he may not participate in the active work of the society. He may at any time within three years, however, complete his membership by paying his dues for the current year, together with any back dues that may have accrued against him.

SEC. 5. Members neglecting the payment of dues for three years, after proper notification from the treasurer, shall have their names dropped from the roll of membership. Any person thus dropped shall have the privilege of reinstatement by paying all arrearages, on recommendation of the Board of Censors.

SEC. 6. Any physician of eminent attainments in the special fields of medicine with which this society is concerned, may be elected an Honorary Member on recommendation of the Board of Censors at any annual meeting of the society, and shall be exempt from dues and shall have all the privileges of members, except voting and eligibility to office.

SEC. 7. Any foreign physician may be elected a Corresponding Member of the society at any annual meeting, on recommendation of the Board of Censors, and shall have all the privileges of members, except voting and eligibility to office.

ARTICLE VI.—RULES OF ORDER.

SECTION 1. The rules governing the deliberations of this society shall be those found in Roberts' Rules of Order.

SEC. 2. No report or paper shall be received by the society in an incomplete or unfinished condition, and the title of any proposed paper shall be forwarded to the president by April 1st of each year and the completed paper by May 1st.

SEC. 3. The time allowed for the presentation of any paper shall be twenty minutes. The leading discussion shall not exceed ten minutes, and all other discussion five minutes for each speaker.

ARTICLE VII.

These by-laws may be altered or amended by a vote of two-thirds of the members present at the annual meeting.

STANDING RESOLUTIONS.

Adopted June 19, 1899.

"*Resolved,* That the Committee on the Nomination of Officers shall consist of all the ex-presidents of the society present at any meeting, provided that in any case less than three be present the president shall appoint from the members present a number sufficient to make the committee consist of three members."

Adopted June 16, 1900.

"*Resolved,* That all papers presented before this society shall become its property and be *first* published in its official organ; and, furthermore, be it

"*Resolved,* That the Homœopathic Eye, Ear and Throat Journal be continued as the official organ of the society."

Adopted June 19, 1900.

"*Resolved,* That the president be requested to appoint at each annual meeting a committee of three members on transportation, who shall act, as far as possible, conjointly with the same committee of the Institute."

CONTENTS.

Abscess of Brain Due to Ear Disease. J. Martine Kershaw, M. D..... 157
Adrenalin Chloride. Daniel A. MacLachlan, M. D..... 335
Adrenalin; Its Advantages and Disadvantages. Geo. F. Bagby, M. D..... 331
Bagby, Geo. F., M. D. Adrenalin; Its Advantages and Disadvantages..... 331
Baldwin, Edward Hill, M. D., O. et A. Chir. Indications and Contra-Indications for the Use of the Mydriatic..... 71
Ball, J. H., M. D. Intra-Ocular Tumors Involving the Choroid and Retina. 99
Barbee, B. I., M. D. Retinitis Albuminurica..... 78
Beebe, E. W., M. D. Surgical Instruments vs. Cycloplegics..... 50
Bissell, Elmer Jefferson, M. D. The Treatment of Immature Cataracts..... 34
Blair, Wm. W., M. D. Acute Glaucoma..... 250
Brooks, E. D., M. D. Acute Hoarseness of Singers and Public Speakers... 211
Calcareas in Diseases of the Nose, Throat and Ears. T. Morris Strong, A. M., M. D..... 198
Campbell, J. A., M. D. Glaucoma Without Increase of Tension..... 282
" " Some Observations on the Treatment of Corneal Ulcerations in Gonorrhœal Ophthalmia..... 75
Cataract Extraction. Francis B. Kellogg, M. D..... 207
Cataract Extractions, Fifty. Chas. H. Helfrich, M. D..... 122
Cataracts, the Treatment of Immature. Elmer Jefferson Bissell, M. D..... 34
Cerebella Abscess Following Chronic Suppurative Otitis Media, a Case of. Frederick W. Colburn, M. D..... 161
Cerebral Abscess, a Case of. Geo. H. Shepard, M. D., and Alton G. Warner, M. D..... 140
Cerebral Abscess of the Right Temporo-Sphenoidal Lobe Complicated With Basilar Meningitis in a Case of Acute Otitis Media. Alton G. Warner, M. D. 148
Colburn, Frederick W., M. D. A Case of Cerebella Abscess Following Chronic Suppurative Otitis Media..... 161
Colds, Cause, Course and Complications. Robert G. Reed, M. D..... 392
Colds, the Preventive Treatment of. O. L. Smith, M. D..... 68
Congenital Stridor in Infants, Three Cases of. Dudley Wright, F. R. C. S.. 47
Consumptive Houses, the Danger of and the Importance of Properly Fumigating. J. Henry Hallock, M. D..... 56
Copeland, Royal S., A. M., M. D. Pharyngo-Keratosis, Benzozone and the Homœopathic Treatment of Tonsilar Affections..... 225
Custis, J. B. Gregg, M. D. Homœopathic Therapeutics of Glaucoma..... 275
Decimal Notation for Visual Acuity. Harold Wilson, M. D..... 323

Dickie, Perry, M. D. The Non-Operative Treatment of Mastoiditis..... 235
Dowling, J. Ivimey, M. D. The Nose and Naso-Pharynx; Their Relation to Disease, Conditions of the Tympanum..... 220
Duffield, Alice V., M. D. Exophoria With Treatment..... 91
Ear Disease; Diagnosis of Internal. George W. McDowell, A. M., M. D.... 300
Election of Members 21
Election of Officers 21
Ethmoiditis; Three Cases. Frank B. Seitz, M. D..... 382
Eustachian Tube; Dilatation of by Electrolysis. A. B. Nelles, M. D..... 344
Exophoria With Treatment. Alice V. Duffield, M. D..... 91
Eye Reflexes. Bushrod W. James, M. D., LL. D..... 61
Fellows, C. Gurnee, M. D. President's Address..... 27
French, Hayes C., M. D. Memorial Remarks..... 13
Garrison, John B., M. D. Chronic Nasal Obstruction; Treatment..... 358
Gary's Ophthalmo-Oscillator. Charles Leslie Rumsey, A. M., M. D..... 306
Glaucoma, Acute. Wm. W. Blair, M. D..... 250
Glaucoma; Homœopathic Therapeutics of. J. B. Gregg Custis, M. D..... 275
Glaucoma; Homœopathic Treatment of. E. H. Linnell, M. D..... 270
Glaucoma; Operative and Non-Operative Treatment of. A. B. Norton, M. D. 263
Glaucoma, Simple Report of Operations. C. J. Swan, M. D..... 286
Glaucoma Without Increase of Tension. Jas. A. Campbell, M. D..... 282
Hallock, J. Henry, M. D. The Danger of Consumptive Houses and the Importance of Properly Fumigating..... 56
Helfrich, Chas. H., M. D. Fifty Cataract Extractions..... 122
Hoarseness of Singers and Public Speakers. E. D. Brooks, M. D..... 211
Houghton, Henry Clarke, M. D. Memorial Remarks..... 13
Hoyt, Herbert W., M. D. The Middle Meatus and the Middle Turbinate.. 377
Intra-Ocular Tumors Involving the Choroid and Retina. J. H. Ball, M. D.. 99
James, Bushrod W., M. D., LL. D. Eye Reflexes 61
Kehr, S. S., M. D. The Uses of the Salts of Potash in Diseases of the Ear. 166
Kellogg, Francis B., M. D. Cataract Extraction..... 207
Kershaw, J. Martine, M. D. Abscess of Brain Due to Ear Disease..... 157
King, William R., M. D. Pneumatic and Oscillatory Massage of the Visual and Vocal Organs..... 310
Lewis, Fred. D., M. D. Sarcoma of the Nasal Septum..... 248
Linnell, E. H., M. D. The Homœopathic Treatment of Glaucoma..... 270
MacLachlan, Daniel A., M. D. Adrenalin Chloride..... 335
Mann, E. L., M. D. The Throat and Ear Complications of La Grippe..... 180
Massage, Pneumatic and Oscillatory of the Visual and Vocal Organs. William R. King, M. D..... 310
Mastoiditis; the Non-Operative Treatment of. Perry Dickie, M. D..... 235
McDowell, George W., A. M., M. D. Diagnosis of Internal Ear Diseases.. 300
Mydriatic; the Indications and Contra-Indications for the Use of. Edward Hill Baldwin, M. D..... 71
Myopia; the Prevention of. George A. Suffa, M. D..... 84
Nasal Obstruction; Etiology and Diagnosis. Irving Townsend, M. D..... 353
Nasal Obstruction, Treatment. John B. Garrison, M. D..... 358

Nelles, A. B., M. D. Dilatation of the Eustachian Tube by Electrolysis.... 344
Norton, A. B., M. D. The Operative and Non-Operative Treatment of Glaucoma 263
Nose and Naso-Pharynx; Their Relation to Diseased Condition of the Tympanum. J. Ivimey Dowling, M. D..... 220
Ocular Complications of Sinusitis Treated and Cured Without Surgical Intervention. Daniel Parenteau, M. D..... 385
Ocular Diseases, Relation of to Pathological Conditions in the Nares. A. Worrall Palmer, M. D..... 326
Palmer, A. Worrall, M. D. The Relation of Some Ocular Diseases to Pathological Conditions in the Nares..... 326
Parenteau, Daniel, M. D. Some Ocular Complications of Sinusitis Treated and Cured Without Surgical Intervention..... 385
Pharyngo-Keratosis, Benzone and the Homœopathic Treatment of Tonsilar Affections. Royal S. Copeland, A. M., M. D..... 225
President's Address. C. Gurnee Fellows, M. D..... 26
Proceedings of the Fifteenth Annual Meeting..... 9
Protoneuclein in the Eye and Ear; a Further Report on. Isaac C. Soule, M. D., Ph. D..... 348
Reed, Robert G., M. D. Colds, Cause, Course and Complications..... 392
Report of the Committee on Test-Proving..... 16
Respiratory Pasage; Some Observations on. Thomas L. Shearer, M. B. C. M., Edin..... 187
Retinitis Albuminurica. B. I. Barbee, M. D..... 78
Rice, Geo. B., M. D. Tertiary Syphilis of the Larynx, With an Illustrative Case Necessitating Tracheotomy..... 174
Rumsey, Charles Leslie, A. M., M. D. Gary's Ophthalmo-Oscillator..... 306
Sarcoma of the Nasal Septum. Fred. D. Lewis, M. D..... 248
Seitz, Frank B., M. D. Ethmoiditis; Three Cases..... 382
Septum, Deflections and Deformities of. C. E. Teets, M. D..... 368
Shearer, Thomas L., M. B. C. M., Edin. Some Observations on the Respiratory Passages 187
Shepard, Geo. A., M. D. A Case of Cerebral Abscess..... 140
Smith, O. L., M. D. The Preventive Treatment of Colds..... 68
Some Observations on the Treatment of Corneal Ulceration in Gonorrhœal Ophthalmia. Jas. A. Campbell, M. D..... 75
Soule, Isaac C., M. D., Ph. D. A Further Report on Protoneuclein in the Eye and Ear 348
Stereoscope in Heterophoria and Incipient Strabismus. David W. Wells, M. D. 107
Stewart, Thomas M., M. D. Syphilis of the Optic Nerve and Retina..... 194
Strong, T. Morris, A. M., M. D. The Calcareas in Diseases of the Nose, Throat and Ears 198
Subjective Instruments vs. Cycloplegies. E. W. Beebe, M. D..... 50
Suffa, George A., M. D. The Prevention of Myopia..... 84
Swan, C. J., M. D. Report of Operations on Two Cases of Simple Glaucoma 286
Syphilis of the Optic Nerve and Retina. Thomas M. Stewart, M. D..... 194

Teets, C. E., M. D. Deflections and Deformities of the Septum..... 368
Tertiary Syphilis of the Larynx, With an Illustrative Case Necessitating Tracheotomy. Geo. B. Rice, M. D..... 174
The Middle Meatus and the Middle Turbinate. Herbert W. Hoyt, M. D... 377
The Uses of the Salts of Potash in Diseases of the Ear. S. S. Kehr, M. D... 166
Throat and Ear Complications of La Grippe. E. L. Mann, M. D..... 180
Townsend, Irving, M. D. Chronic Nasal Obstructions; Etiology and Diagnosis 353
Treasurer's Report 12
Warner, Alton G., M. D. A Case of Cerebral Abscess..... 140
" " " Cerebral Abscess of the Right Temporo-Sphenoidal Lobe Complicated With Basilar Meningitis in a Case of Acute Otitis Media..... 148
Wells, David W., M. D. Stereoscope in Heterophoria and Incipient Strabismus 107
Wilson, Harold, M. D. The Decimal Notation of Visual Acuity..... 323
Wright, Dudley, F. R. C. S. Three Cases of Congenital Stridor in Infants. 47

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